



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/US00/07561 (22) International Filing Date: 22 March 2000 (22.03.2000) (30) Priority Data: 60/134,956 19 May 1999 (19.05.1999) US (60) Parent Application or Grant MEK SECURITIES LLC [/]; O. MIRAL, Kim-E. [/]; O. WHITMYER, Wesley, W., Jr.; O.	<b>Published</b>	
(54) Title: NETWORK-BASED TRADING SYSTEM AND METHOD (54) Titre: SYSTÈME ET PROCÉDÉ D'ÉCHANGE DE TITRES EN RÉSEAU		
<p>(57) Abstract</p> <p>A network based trading system and method are provided which combine economies-of-scale enjoyed by institutional investors and mutual funds with direct ownerships of securities to permit individual investors to participate in the bond market in a cost effective manner. Through team investing (600), institutional economies-of-scale are created for individuals by allowing groupings of individuals to buy and sell bonds as a "team", thereby executing one cost-efficient trade in the institutional market rather than many smaller trades in the inefficient trade in the institutional market rather than many smaller trades in the inefficient retail market. Also, through customer-to-customer (C2C) trading, customers are allowed to negotiate a trade directly with one another as an alternative to selling in the inter-dealer market. The system and method also incorporate an automatic risk assessment and trade approval routine for evaluating a proposed trade of a financial instrument which was received from a customer in an electronic form.</p> <p>(57) Abrégé</p> <p>L'invention concerne un système et un procédé d'échange de titres en réseau associant des économies d'échelle appréciées par les investisseurs institutionnels et les fonds de placement à la propriété directe de titres, ce qui permet à des investisseurs privés d'opérer sur le marché des obligations avec efficacité. Grâce à l'investissement d'équipe (600), on offre des économies d'échelle de niveau institutionnel à des particuliers en permettant à des groupes de particuliers d'acheter et de vendre des obligations en _ équipe _ ce qui leur permet d'effectuer un échange rémunérateur sur le marché institutionnel au lieu de devoir procéder à de nombreux petits échanges sur le marché de détail, qui s'avère peu lucratif. De même, grâce au commerce de client à client (C2C), les clients peuvent négocier un échange directement entre eux au lieu de vendre leurs titres sur le marché intermédiaire. Le système et le procédé comprennent également une évaluation de risque automatique et une routine d'acceptation d'échange destinées à examiner une proposition d'échange d'un instrument financier reçu à partir d'un client sous forme électronique.</p>		

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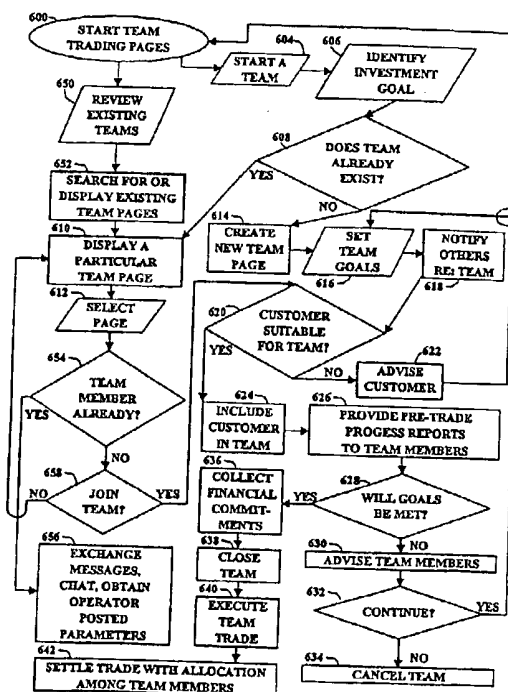
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(54) Title: NETWORK-BASED TRADING SYSTEM AND METHOD

(57) Abstract

A network based trading system and method are provided which combine economies-of-scale enjoyed by institutional investors and mutual funds with direct ownerships of securities to permit individual investors to participate in the bond market in a cost effective manner. Through team investing (600), institutional economies-of-scale are created for individuals by allowing groupings of individuals to buy and sell bonds as a "team", thereby executing one cost-efficient trade in the institutional market rather than many smaller trades in the inefficient trade in the institutional market rather than many smaller trades in the inefficient retail market. Also, through customer-to-customer (C2C) trading, customers are allowed to negotiate a trade directly with one another as an alternative to selling in the inter-dealer market. The system and method also incorporate an automatic risk assessment and trade approval routine for evaluating a proposed trade of a financial instrument which was received from a customer in an electronic form.



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**Description**

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## NETWORK-BASED TRADING SYSTEM AND METHOD

### Claim of Priority

This application claims priority from U.S. Provisional Patent Application Serial No. 60/134,956 filed May 19, 1999.

### Field of the Invention

The present invention relates to an improved system and method for trading financial instruments such as bonds, as well as fractional portions of traded instruments, and more particularly to a system and method which applies trade-approval rules to a proposed trade so that the customer's proposed trade can be approved without manual intervention, which provides anonymous customer-to-customer trading, and which permits aggregated trading among anonymous customers with common investment goals.

### Background of the Invention

Traditionally, the securities markets have not been hospitable to individual investors. This is especially true of the bond market. Bonds exist in minimum units of \$1,000 principal amount for taxable bonds or \$5,000 for municipal bonds. It is essentially an over-the-counter market, i.e., there is in practice no central exchange for bond trading. The prospects of a national bond exchange are dim in view of the fact that broker dealers are presently enjoying large profits through the status quo.

Moreover, except for U.S. Government securities, bond price quotes are only readily available to brokers and dealers. While some bonds trade on the New York and American Stock Exchanges, such trading is limited to listed issues, of which there are very few corporate bonds and no municipal bonds or Treasury bonds.

Fewer corporations are now listing their bonds, even though the listing service is free to stock-listed companies.

As a group, individual investors have an enormous asset base. However, trading by individual investors is fragmented among relatively tiny pools of money, resulting in small trades of \$5,000 to \$10,000. The individual investor attempting to execute a \$10,000 trade must compete with million-dollar institutional orders, particularly in the bond market. At this size of trade, pricing for, and availability of, bonds is unattractive and therefore trading and participation by individual investors in the bond market is relatively infrequent. While there exists an active "odd-lot" market, that is, a less-than-institutional sized market, for individual bond trades, the choices are limited (e.g., choice of issuer, credit rating, maturity, interest rate, call protection, etc.) unless the investment is an "individual round lot" of \$100,000 or more. Even at this larger size of trade, however, attractive prices and bond selection are not assured. For individual investors, the spreads are large, with 2 to 6 points (i.e., % of principal amount) being common, and, when coupled with commission charges, the return-on-investment (ROI) can be significantly compromised. In addition, the time for execution ranges on the order of days rather than seconds as in the more liquid equity markets.

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Individual investors have the same fixed costs in trading bonds as institutional investors. Trade-processing costs average about \$50 per trade, regardless of the size of the trade. For a \$1 million trade, this cost is negligible. But for a \$5,000 trade, such costs constitute a full point before considering the spread. Such costs have also discouraged trading and direct ownership of bonds by individual investors.

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Accordingly, the typical investors in the bond markets have been large institutional investors, primarily pension funds, mutual funds and insurance companies. With asset pools of \$100 million or more, such institutions can trade regularly in amounts of \$1 million or more. Both the corporate and municipal markets are highly liquid for institutional investors, with bid/offer spreads being on average 1/8-1/2 points in price, depending on maturity.

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Another problem with the current securities markets is that there is currently no vehicle by which securities holders may readily trade securities, or fractional shares thereof, directly with one another. Buyers and sellers must, therefore, use an intermediate broker and incur the high fees and costs associated therewith. As discussed above, such fees and costs can be prohibitive, particularly when relatively small transactions are involved. Furthermore, as there is no central exchange for bonds, it may be difficult for a buyer who is seeking to purchase a specific bond to locate a seller who is selling that specific bond. This is particularly true when only a small number of bonds, or a fractional share of a bond, are at issue. Thus, the bond

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5 market is an illiquid market in that even if an investor is able to purchase a small  
number of bonds, or a fractional share of a bond, that investor may not readily sell  
10 such bonds if cash is quickly needed or desired. Ownership of bonds, therefore, has  
not been regarded as an attractive alternative to cash-on-hand for the individual  
5 investor.

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20 A further problem with the current bond market relates to longstanding  
securities industry regulations which require that the firm through which the trade is  
made ensure that the customer's investing activity is suitable for that customer  
based upon the customer's financial situation and investing expertise. Traditionally,  
25 10 these regulations have been met by intermediate brokers by manually reviewing and  
approving each trade prior to settlement. As far as the inventor is aware, this  
approach continues today with known Internet-based trading systems, such as those  
30 made available by E\*Trade, Charles Schwab and Fidelity, with back office staff  
reviewing each order and manually approving same. Such manual review and  
35 15 approval increases the costs associated with securities trading.

40 What is desired, therefore, is a securities trading system which permits  
individuals to own and trade bonds directly through a cost effective trading system,  
which makes short-term bonds an attractive alternative to cash-on-hand for the  
45 individual investor, and which provides an expert system for effectuating automated  
20 trade approvals for each securities trade of each individual investor.

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Summary of the Invention

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Accordingly, it is an object of the present invention to provide a securities trading system which is hospitable to individual investors.

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Another object of the present invention is to provide a securities trading system which encourages trading and direct ownership of bonds by individual investors

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Another object of the present invention is to provide a securities trading system having the above characteristics and which capitalizes on the large asset base of individual investors as a group.

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A further object of the present invention is to provide a securities trading system having the above characteristics and which facilitates the execution of relatively small bond trades.

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Still another object of the present invention is to provide a securities trading system having the above characteristics and which reduces the time and costs associated with executing bond trades.

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Yet a further object of the present invention is to provide a securities trading system having the above characteristics and which provides a vehicle by which bond holders may readily trade bonds, or fractional shares of bonds, directly with one another.

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10 Still a further object of the present invention is to provide a securities trading system having the above characteristics and which provides a central exchange for bonds.

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5 Still another object of the present invention is to provide a securities trading system having the above characteristics and which facilitates the pairing of a buyer  
20 who is seeking to purchase a specific bond with a seller who is selling that specific bond.

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30 Yet another object of the present invention is to provide a securities trading system having the above characteristics and which automates required reviewing and approving processes for each trade prior to settlement.

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40 These and other objects of the present invention are achieved by provision of a system which combines economies-of-scale enjoyed by institutional investors and mutual funds with direct ownership of securities to permit individual investors to  
15 participate in the bond market in a cost effective manner. Through team investing, institutional economies-of-scale are created for individuals by allowing groupings of  
45 individuals to buy and sell bonds as a "team," thereby executing one cost-efficient trade in the institutional market rather than many smaller trades in the inefficient retail market. Also, through customer-to-customer (C2C) trading, customers are  
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allowed to negotiate a trade directly with one another as an alternative to selling in the inter-dealer market.

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In one respect, the invention provides a method for approving a proposed trade of a financial instrument which was received from a customer in an electronic form. This method takes advantage of the electronic transmission of orders to buy or sell a financial instrument by electronically parsing the trade ticket to obtain the transaction details of the proposed trade. Also, the automated system obtains account information for the customer who submitted the electronic form, including that customer's "risk rating." As described below, a risk rating is assigned to each customer participating in the trading system upon opening an account and characterizes the experience of the customer and the nature of the account (e.g., individual, IRA, custodial, etc.). Periodically, the risk rating may be updated to reflect current financial conditions of the account or to comply with regulatory requirements. The suitability of the proposed trade for that customer is then determinable using the transaction details of the proposed trade. The method automatically approves the proposed trade if the risk rating and the suitability bear a predetermined relationship to one another which indicates that the proposed trade should be, in fact, suitable for that customer.

In a preferred form, the automated trade approval method of the invention applies one or more rules from a rule base to the transaction details of the proposed trade. The rule base may also use the account information of the customer in

5 determining the suitability of the proposed trade. Once the proposed trade is  
approved, the system may automatically generate a confirmation notice of the  
10 approval. On the other hand, trades which may be unsuitable result in the automatic  
display of an unsuitability warning.

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5 Another aspect of the invention provides a method for aggregating the  
common investment desires of several customers so that they can purchase, as a  
20 team, a quantity of a common financial instrument in one trade. This method calls  
for each customer to anonymously post, over the Internet for other customers of the  
system to see, a desire to effect a team trade. Each customer desirous of  
25 participating in the team trade then anonymously provides a tentative financial  
commitment to the automated system. This commitment is also obtained over the  
Internet, and team members may join the team and communicate anonymously with  
30 other team members to exchange concerns and ideas about how a particular  
investment goal might be achieved. Once the transaction is finalized by the team  
35 members, financial commitments are also finalized. The system thereafter  
purchases in a single trade a quantity of the financial instrument, which has a total  
40 cost no greater than the sum of the obtained financial commitments. The accounts  
of each of the team members is then charged in an amount up to their respective  
financial commitments. Also, each team member's account is credited with  
45 20 ownership of a proportionate share of the financial instrument that was just  
purchased. A customer's proportionate share is the amount charged to the  
customer divided by the total cost of the purchase.  
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In another aspect, the invention provides a method for directly trading a financial instrument directly between two customers without an intermediate broker. This method leverages the Internet by bringing a seller together with a prospective buyer or a buyer together with a prospective seller. The method includes the step of initially establishing a secure and anonymous communication link between the two customers on the Internet. Through the secure connection, the customers negotiate a price for a proposed trade without knowing each other's identity. However, both customers are customers of the system. When the customers have agreed upon a price for the proposed trade, that price is provided to, or obtained by, the automated system which then executes the proposed trade.

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In a preferred form, this customer-to-customer trading method includes the additional step of confirming, without human intervention, that the agreed upon price is fair prior to executing the proposed trade. This is of particular value in illiquid markets such as some bonds and stocks. Also in a preferred form, the customer-to-customer trading method utilizes the automated trade approval methodology referred to above and described in detail herein.

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The present invention also relates to trading systems which are accessible through the Internet. A system in accordance with one or more aspects of the invention is configured as a programmed computer or server which implements the above described methods, including one or more of the following: approving proposed

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5 trades of financial instruments without human intervention; aggregating the orders of  
several customers for a common financial instrument to purchase/sell in a single trade  
10 a larger quantity of that financial instrument; executing a trade of a common  
investment package for a team of customers; permitting direct and preferably  
15 anonymous trading of financial instruments between first and second customers; and  
providing customer support services such as prospectus information, news, account  
balance and credit information, chat rooms, and advice and answers to customer  
20 inquiries. The computer or server includes a processor which is programmed as by a  
software program to implement the trading system, data storage which maintains  
25 10 customer data including account balance information and current holdings, and  
communication links which permit electronic data interchange between the trading  
system's computer and the computers of sponsoring broker-dealers and/or customers  
30 which are used to access the trading system. The process flows illustrated in the  
accompanying Drawings illustrate the programs that are implementable on the trading  
15 system's computer or server.

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40 The invention and its particular features and advantages will become more  
apparent from the following detailed description considered with reference to the  
accompanying drawings.

45 Brief Description of the Drawings

20 **Fig. 1** illustrates a hardware arrangement that may be used to implement a  
50 system and method in accordance with the present invention;

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**Fig. 2** is a block diagram of an automated risk assessment and trade approval portion of the system of FIG. 1;

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**Fig. 3** is a block diagram of a team trading portion of the system of FIG. 1;

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**Fig. 4** is a block diagram of a customer to customer trading portion of the system of FIG. 1;

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**Fig. 5** is a flow diagram of a main or home page provided by the system of FIG. 1;

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**Fig. 6** is a flow diagram of a customer enrollment process provided by the system of FIG. 1;

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**Fig. 7** is a flow diagram of customer login and services pages provided by the system of FIG. 1;

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**Fig. 8** is a flow diagram for trading pages including street trades provided by and executable through the system of FIG. 1;

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**Fig. 9** is a flow diagram of team trading pages that are provided by the system of FIG. 1 in accordance with one aspect of the invention;

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**Fig. 10** is a flow diagram of customer-to-customer trading pages that are provided by the system of FIG. 1 in accordance with another aspect of the invention;

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**Fig. 11** is a flow diagram of negotiation pages that may be used by customers to implement the customer-to-customer trades of FIG. 10;

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5 **Fig. 12** is a flow diagram for automated trade approval of trades of financial instruments and investment packages that is provided by the system of FIG. 1 in accordance with a further aspect of the invention;

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**Fig. 13** illustrates transaction details of a completed trade wherein a purchasing customer bought a bond;

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**Fig. 14** illustrates a team investing web page which identifies the team web pages of active teams;

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**Fig. 15** illustrates a form for starting a new team web page;

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**Fig. 16** illustrates a bonds-for-sale web page;

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**Fig. 17** illustrates a bonds-wanted web page;

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Fig. 18 illustrates a bonds-for-sale data entry form;

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Fig. 19 illustrates a bonds-wanted data entry form; and

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Fig. 20 illustrates an order form that may be used to submit a purchase or sale order of a particular financial instrument.

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#### Detailed Description of the Invention

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By way of overview and introduction, a server 100 which is configured to implement the system and method of the invention is illustrated in FIG. 1. FIG. 1 shows a hardware arrangement 102 including an automated trading/clearing server 100 with a bilateral communication line 103 for communication over the Internet or other networks 104. By way of the Internet 104, the automated trading/clearing server communicates with plural customers 106 using remote stations or personal computers 108. The server 100 also communicates with Sponsoring Broker Dealers (SBD) 110 through the Internet 104. The customers 106 and the SBDs 110 connect to the Internet over respective communication lines 112, 114. A plurality of customers 106 at widely dispersed geographic locations can communicate with the server 100 through the Internet 104. Likewise, any number of SBDs can refer customers to the automated trading/clearing server 100 through the Internet 104 or other means. Each SBD has a number of its own customers 116 that access the automated trading/clearing server 100 through the SBD 110 or through direct connections to the Internet 104 by way of connection 117.

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Referring now to FIG. 2, an automated risk assessment and trade approval routine 120 of the system is shown. When a customer 106 logs onto the system for the first time, customer 106 transmits customer information 122 to server 100. The information includes information concerning such matters as the customer's financial resources, the customer's trading experience, the type of customer account, and the like. Risk assessment and trade approval routine 120 receives the customer information 122, and uses this information to assign a customer risk rating ("CRR") to the new customer, which CRR is stored on a database 124 of customer CRRs. The CRR reflects the customer's financial resources (such as net worth, annual income data, etc.) and investment expertise. The CRR is determined automatically for each customer in response to the financial and investment background information provided in the application form, and is based upon a set of customer risk assessment rules stored on a database 126.

Later, when a customer 106 attempts to execute a trade by sending a trade ticket 128 to server 100, the customer's trades are reviewed and approved automatically by risk assessment and trade approval routine 120 which assesses the suitability of a trade for that particular customer 106. The server 100 obtains the transaction details of the proposed trade from the trade ticket 128. The transaction details include all of the information entered into the trade ticket by the customer 106. Risk assessment and trade approval routine 120 used these transactions details to retrieve that customer's CRR from database 124 and to assign a trade risk

5 rating (TRR) to the proposed trade. The TRR reflects the underlying economic risks  
of the instrument itself or the nature of the trade within the overall context of the  
10 customer's risk profile (which is reflected in the CRR), and is based upon a set of  
trade risk assessment rules stored on a database 130.

15 5 After the TRR is determined, it is compared to the customer's CRR, that is,  
the TRR is gauged to the risk rating that was assigned to the particular customer  
20 who is seeking approval for the trade. The gauge is preferably whether CRR is  
 $\leq$  TRR, although other predetermined relationships can be used. Thus, if the  
customer risk rating is less than or equal to the determined trade risk rating, then the  
25 10 trade is automatically approved by risk assessment and trade approval routine 120.  
Trade confirmation notices 132 are provided to the buyer, seller, and their SBDs  
30 136, and trade settlement is scheduled by the server 100. If the customer risk rating  
is not less than or equal to the determined trade risk rating, the details in the  
proposed trade ticket trigger an unsuitability warning 134 which is transmitted to  
35 15 customer 106. The warning 134 can advise the customer 106 of the potentially high  
market risk, potential impact on the customer's investment portfolio or other warning.

40 Preferably, the suitability of the proposed trade is rated for both the buyer and  
seller. Also preferably, each party is not made aware of any unsuitability  
45 determination associated with the other party to the trade.

50 20 Referring now to FIG. 3, team trading, in accordance with an aspect of the

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present invention, permits individual investors to aggregate their respective buy or sell orders for execution as a single order of a given quantity of a common financial instrument or investment package. Necessarily, the team members must share an investment goal and agree to a common investment vehicle. A team trading routine 138 executing on system server 100 enables this by bringing together investors with common interests and permitting them to exchange ideas and obtain system-provided information relevant to their investment goal, such as, for example, specific bonds which according to present market conditions satisfy the goal.

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A user 106 must first decide whether to start a new team or review existing teams and perhaps join and participate in them. A team creator 140 starts a team by entering a start-team request and providing start team information 142. The start team information specifies, generally, the investment goal that the team creator 140 has in mind, such as the type of issuer (e.g., household name corporation or municipality), the credit quality (e.g., AAA or AA.), the maturity (e.g., 1 or 5 years), and the purpose of the investment (e.g., college education or retirement).

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The team trading routine 138 examines the team pages database 143 to determine whether or not one or more teams exist which address the stated investment goal of the team creator 140, and if not, establishes a team page which addresses that goal and stores the newly created team page on team pages database 143. In other words, if a need for an additional team is confirmed, then a new team page is created. Because a number of team pages are provided by the

5 system, each having its own investment goal and investment package (which may  
comprise only one financial instrument) the customer may be better served by being  
10 directed to an existing team than to be the sole member of a new team. If such is  
the case, team creator 140 essentially becomes a potential team member 144.

15 5 Upon creating the new team web page, the system processes the information  
in the start team information 142 in view of current market conditions and posts on  
20 the team web page the specific instruments which can be purchased in order to  
reach the team investment goal.

25 Other customers, or potential team members 144, of the system 100 are  
10 notified of the new team, for example, by email, by a banner notice to all customers  
upon logging on to the system, or simply by including the new team web page for  
30 display along with the other team web pages. Preferably, potential team members  
144 can review a list of existing teams to find one of interest, or can perform a  
35 search for a particular team using a standard website search engine. Once a team  
page of interest 146 has been located in the list, it is displayed to potential team  
15 members 144. A potential team member 144 may then send a request to join the  
40 team, or if already a member, may send a team page update request 148 to  
exchange messages, open a chat session or obtain updated parameters that may  
45 be posted on the team web page 146 from time-to-time. Thus, through the team  
20 web page, team members 144 may exchange ideas, discuss important topics and  
debate differences of opinion prior to making a team trade.  
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As the trade date approaches, then a final financial commitments request **150** is sent to the team members **144** to aggregate sufficient funds to implement a single larger trade, preferably an institutional-sized round lot trade. Each team member **144** can specify his or her investment in terms of total amount of dollars to be invested (which may result in the ownership of fractional bonds) or in terms of face amount of whole bonds. Each customer specifies his or her respective commitment **152** by posting that commitment **152** to the system. Once commitments **152** are received from all team members **144**, the team is closed and the trade executed.

Referring now to FIG. 4, a customer-to-customer (C2C) trading routine **154** is shown. In accordance with this aspect of the invention, one customer trades directly with another for the instrument that he or she wishes to purchase or sell without an intermediate broker. The C2C trading routine **154** receives from a seller **156** an indication **158** of a bond held by the seller **156** which is available for direct sale to another customer. The C2C trading routine **154** also receives from a buyer **160** an indication **162** of those bonds, or types of bonds, that particular buyer **160** is interested in purchasing. The indications **158**, **162** may be in the form of "bonds for sale" and/or "bonds wanted" lists as described fully below, although such is not required.

Once a potential trade is found to exist, that is, a seller **156** is matched with a buyer **160**, the seller **156** and buyer **160** qualifications for negotiating the trade are

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verified. Specifically, the C2C trading routine **154** confirms that the buyer **160** has sufficient funds by examining the customer's account to determine how much cash is available, and perhaps how much credit can be extended in any associated margin account. The C2C trading routine **154** also confirms that the seller **156** has the bond  
5 being sold in his portfolio.

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Once the seller **156** and buyer **160** qualifications have been verified, the C2C trading routine **154** generates and transmits to the seller **156** and the buyer **160** a notification **164** of the potential trade and establishes a communication link between the two customers. Thus, the seller **156** is able to send/receive messages **166**  
10 to/from the buyer **160**, and the buyer **160** is able to send/receive messages **168** to/from the seller **156**, thus allowing for communication and negotiation between the parties.

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The C2C trading routine **154** also determines the fair market value **170** of the bond at issue, and transmits the fair market value **170** to the seller **156** and the  
15 buyer **160** as a base line comparison value to guide the parties to a fair trade. The fair value of the listed bond is calculated in light of the trade date, settlement date, accrued interest, appropriate Treasury yield and other relevant market information.

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When the seller **156** and the buyer **160** believe that they have come to an agreement, including an agreement as to price, each party submits (posts) his or her  
50 respective trade ticket **172** and the C2C trading routine **154** determines whether the

5 terms from the two trade tickets **172** match. If the tickets do not match, then the  
10 buyer and seller are notified of the discrepancy **174** and communications may again  
15 proceed to correct the discrepancy or cease negotiations. If the terms do match,  
however, then, in accordance with a further aspect of the invention, the fairness of  
the agreed upon terms to both parties is assessed automatically and without manual  
intervention, as described fully below.

20 If the price is not deemed fair, then the buyer and seller are advised of this  
discrepancy **174** and the anonymous communications between the buyer and seller  
25 can again proceed. This mechanism ensures that one customer does not take  
10 advantage of another in a direct trade. However, if the price is determined to be fair  
(or if buyer and seller both agree to the negotiated price despite a system warning),  
30 then the buyer and seller are notified that the trade can be executed **174** and the  
system obtains the confirmation **176** from both parties that the trade is to be  
executed in accordance with the trade tickets **172**. Thereafter, the trade may be  
35 15 executed and subsequently settled.

40 The present invention will now be described in more detail with respect to  
FIGS. 5-20.

45 With reference now to FIG. 5, a person connecting to the server **100** through  
the Internet **104** first accesses the server at step **200**. Preferably, access is  
50 20 achieved using a standard web browser such as commercially available from



5 Microsoft Corporation of Redmond, Washington under the name Internet Explorer®  
or from Netscape Communications Corporation under the name Netscape®  
10 Communicator or through a customized application developed specifically for use  
with this system. The customer 106.116 communicates with the server 100 using  
5 any conventional electronic data communication link such as a modem.

Upon initial access to the server 100, a main page 212 is displayed at step  
20 202 which includes buttons or links to further pages within the website. Through  
buttons or links, the person accessing the server 100 is queried at step 204 to input  
data concerning whether the person is a new customer, an existing customer or a  
25 member of the public seeking information about the trading and investing services  
10 that are provided by the system of the present invention. At steps 206 and 208, the  
user's input is tested to see whether the user is a new customer or an existing  
customer, respectively. If the user is a new customer, then the user will be directed  
30 to further pages in the website to complete an application. Otherwise, the system  
35 tests the user's input at step 208 to determine whether the user is an existing  
15 customer. If the user is an existing customer, then the customer is directed to  
customer-only services provided by the system, described below.

If the user who has accessed the server is neither a new customer nor an  
45 existing customer then the server restricts that user's access, at step 210, to only the  
20 public pages, which may provide marketing or other information concerning the  
trading and investing services that are available to customers.

### 1. New Customers and Customer Risk Rating Assignments

In FIG. 6, the application and review process 300 commences in response to the user inputting at step 204 that he or she is a prospective new customer. The application and review process comprises one or more secure pages within the website of the trading system 100. Initially, the prospective new customer is presented at step 302 with basic disclosure information as required by the SEC and other organizations, as well as the rules of operation of the broker operating the trading system 100. Preferably, this information is presented in summary form. The prospective new customer must assent at step 304 to conditions required to open and maintain an account with the firm. In addition, the new customer must review full disclosure documentation in order to be provided with a new customer application form.

The conditions for opening an account with the firm may include the customer's agreement to having "normal" communications conducted electronically by e-mail or through the website. "Normal" communications include receipt of trade confirmations, account statements, prospectuses and official statements. Other communications may include account balances, relationships with other firms, and other indicia of experience in trading or financial ability.

In the event that the prospective new customer does not agree to conducting business in the manner required by the firm, then that person may be provided with

5 a questionnaire at step 306 so that the firm may better understand what guided that  
person's decision. That person is then directed to the main page at step 308 (see  
10 step 212 of FIG. 5).

15 In the event that the customer is comfortable with the conditions for opening  
5 an account with the firm, then at step 310 the customer is presented with a page  
which provides full disclosure documentation to the prospective new customer. The  
20 page may itself include full copies of the disclosure documents or may include links  
to full text files which may be stored at the server 100 as a word processing file,  
plain text file or in a proprietary format such as Adobe Acrobat® of Adobe Systems  
25 Incorporated. The prospective new customer can click on each of the links to read  
and review the documents immediately or to download them to their computer 108  
30 for future reference. Once the user has downloaded the disclosure documents and  
confirmed at step 312 that he or she has read the disclosure documentation, an  
application form is provided to the customer at step 314.  
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15 The page (or frame) containing the application form is conveyed to the  
customer 106, 116 through a secure socket layer (SSL) connection. The individual  
40 completes the application form and submits it at step 315 to the firm in a  
conventional manner, for example, by clicking a submit button in the application  
45 form. It should be understood that the application form may comprise a series of  
20 pages, each of which requires different and additional information in order to set up  
an account. The information includes the customer's name, address, information  
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5 concerning the trading experience of the customer, and the like. As each form is  
submitted to the server 100, the information in that form may be saved in a database  
10 118 (see FIG. 1). Also, as each form is completed (e.g., by pressing a submit  
button) an embedded script or server-side program can be used at step 316 to  
15 5 validate the entries and prevent the omission of any required information. Invalid  
entries are flagged at step 317. In the event that required information is not  
included in the form and these are flagged entries, as tested at step 318, then the  
20 form is redisplayed to the individual with previously entered information echoed (that  
is, included) in the form. The individual can now correct or provide further  
10 information and resubmit the form at step 315 for further review. Some data may  
25 require manual review, but substantially all of the information can be processed  
automatically.

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In the event that the form is correctly filled out, the application is digitally  
"signed" by the new customer with a "sigNETure." The "sigNETure" includes specific  
35 15 information concerning the customer such as a date, the customer's name and  
social security number and perhaps further information to identify the customer.  
40 The digital signature is obtained at step 320 and signifies that the customer has  
agreed to all of the terms for opening an account and that the requisite disclosure  
documents have been read.

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20 At step 322, an account number is generated and sent to the customer's  
50 browser along with further instructions on how to open the account. At step 323, a

customer risk rating ("CRR") is assigned to the new customer, and the new account and customer data is stored in the database 118 at step 324. The CRR is based on the customer's financial resources (such as net worth, annual income data, etc.) and investment expertise. The CRR is determined automatically for each customer in response to the financial and investment background information provided in the application form. The risk assignment routine parses the contents of the submitted forms, extracts data from some of the fields, and uses that data to determine the CRR. The risk rating for each customer preferably comprises a code consisting of an integer relating to experience, understanding, and risk tolerance and an alphabetic character which characterizes the type of the account. The Risk Rating Table below illustrates some exemplary CRR codes that can be assigned in different combinations to different customers.

**RISK RATING TABLE**

<u>Number/Letter</u>	<u>Meaning</u>
1	Advanced understanding of risk; extensive experience with individual securities; has extensive financial resources.
2	Moderate understanding of risk; limited or no experience with individual securities; invests primarily in mutual funds; has moderate financial resources.
3	Beginning investor; limited understanding of risk; little or no investing experience, besides money market instruments or funds; has limited financial resources.
A	Extensive financial resources; qualifies as an "accredited investor"
M	Custodial/Trust account for a minor
R	Retirement account
X	Missing important information for determining suitability
O	No extra suitability considerations

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If a customer does not supply the information necessary to assign a risk rating, a 3X default rating is assigned. That rating will cause all securities purchases to be considered potentially unsuitable. Preferably, the customer is advised of this fact and encouraged at the time that the application is being submitted to provide the information that is needed to complete his or her CRR assignment and that information is maintained in confidence by the system.

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At step **326**, the customer is advised as to how to fund the account, including how to transfer securities from another account into the new account and how to send or wire cash. The trading system **100** then awaits the receipt of funds which is tested periodically at step **336**. If the funds have been received, then at step **338** the customer is provided with access to the trading/customer services of the trading system **100**. The customer is notified of this new status at step **340**, preferably by email, and the customer intake process of FIG. 6 terminates at step **342**. On the other hand, if funds have not been received within a predetermined interval at step **344**, then a reminder is sent at step **346** to advise the applicant that funding has not yet been received. This provides the applicant with notice to follow-up with his or her prior broker or IRA trustee to determine why funds have not yet been transferred. If a substantially long period of time has passed without funding the account, the application may be canceled and an email notice may be sent to the applicant regarding the same.

5 When the customer is notified of access to the trading/customer services, he  
or she may be further notified of further instructions on how to start using the  
10 account.

15 Certain documents may require a manual signature, for example, a request to  
5 transfer funds from another broker. Such forms can be downloaded by the customer  
from the trading system 100 or sent by regular mail for completion, signature and  
20 mailing to the institution holding such securities. Such documents also would be  
used by outside service providers such as a IRA trustee or prior broker who may not  
25 permit sigNETures.

## 10 2. Services For Enrolled Customers

30 Any customer already enrolled in the trading system 100 can access the  
trading and customer services pages of the system by identifying themselves as a  
customer at step 204 (FIG. 5). That person is then directed to the customer-only  
35 portion of the website which includes various routines and processes commencing at  
15 step 400 of FIG. 7. At step 402, the customer enters his or her identification at a  
secure customer login page. The customer name and password (or other suitable  
40 identifiers known only to the customer and the trading system 100) are entered at  
the login page and tested at step 404 for validity. If the identifier is not known to the  
45 system 100, the person is given at least one more chance at step 405 to enter the  
20 correct identifier, or to return to the main page at step 212.

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Only customers who input identifying information which matches the information previously stored in the database **118** at the server **100** can access the financial planning services and trading web sites made available by the server **100**.

Once identified, the customer selects from a variety of services, including financial planning services, trading services and other functions and services that are made available by the system. The customer selects the service he or she desires at step **406**.

#### **a. Financial Planning Services**

If financial planning services are selected, as determined at step **408**, then investment objective data is provided by the customer at step **410** which the system processes against current market data to determine a potential investment strategy. Financial planning is not the subject of the present invention; however, it may include the determination of a series of transactions to be made in order to invest funds so as to meet or exceed long-term or short-term investment goals. Briefly, the investment objectives data includes an investment goal such as preservation of assets or the degree of risk tolerance permitted to accumulate funds to finance a 10 year old's college education. The investment objective data may further include personal and family financial information such as: liquidity; indebtedness (e.g., any mortgage or credit card debts); insurance coverage; number, age and income generated by family members; prior year tax information; real estate and partnership interests; and the like. Using the data entered by the customer at step **410**, a



5 potential investment strategy determination is made at step 412. The determination  
may be based upon further information such as the risk level assigned to the  
10 customer (see step 323) and current market data 414 provided from a data store or  
other information source (e.g., another website). The determination of the  
5 investment strategy is made by an optimization routine which selects from among  
15 many potential investment vehicles one or more transactions which the model  
concludes will lead to the customer's investment goal. The determined strategy is  
20 displayed at step 416, and the customer, if not done at step 417, can thereafter  
provide new or further assumptions at step 418 to have a revised strategy  
10 determined at step 412, or can return to the selection command page by looping  
25 back to step 406 through a suitable link from the display strategy page.

30 The customer can execute one or more electronic trades which implement the  
strategies outlined by the financial planning services of the trading system 100;  
however, the invention is not so limited. The present invention concerns electronic  
35 15 trades which are not driven or directed by the financial planning routines that may be  
offered by the trading system 100.

#### 40 **b. Trading Services With Automated Approvals**

If trading services are selected at step 406, as determined at step 420, then  
45 the bond/security trading pages are accessed at step 422. From the trading pages,  
20 the customer can execute a street trade, a customer-to-customer trade, a team trade  
or some other trade for an SBD to execute. In accordance with a salient aspect of  
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5 the invention, the customer's trades can be reviewed and approved automatically  
10 using an artificial intelligence routine which assesses the suitability of a trade for that  
particular customer. This aspect of the invention departs from conventional  
approaches wherein a principal must review and approve each trade prior to  
15 settlement; as far as the inventor is aware, this approach continues today in the  
Internet-based trading systems made available by E\*Trade, Charles Schwab,  
Fidelity, and the rest, with back office staff reviewing each order and manually  
20 approving same. The conventional approach flows from longstanding securities  
industry regulations which require that the firm through which the trade is made  
25 ensure that the customer's investing activity is suitable for that customer based upon  
the customer's financial situation.

30 The suitability of a trade for a given customer is gauged relative to the risk  
rating that is assigned to that customer when he or she establishes an account (see  
step 323 of FIG. 6). An automated trade approval routine determines the suitability  
35 of the trade for a particular customer. With reference to FIG. 12, the automated  
trade approval routine starts at step 450. The system 100 obtains the transaction  
40 details of the proposed trade from the trade ticket or other electronic form that is  
completed by the customer at step 452. The transaction details include all of the  
information entered into the trade ticket by the customer. The trade ticket identifies  
45 the customer, and that customer's CRR and other relevant information is obtainable  
20 from the database 118 at step 454.

5 The suitability of the proposed trade is rated at step 456 for both the buyer  
and seller. Whether a trade is suitable or not is rated by applying a series of  
10 analyses. Each analysis explores the underlying economic risks of the instrument  
itself or the nature of the trade within the overall context of the customer's risk profile  
5 (which is reflected in the CRR). After final analysis, the trade is assigned a "Trade  
15 Risk Rating" or "TRR" which is compared directly with the CRR to provide a "Yes" or  
"No" suitability determination at step 458.

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Obtaining a meaningful TRR requires at least two sequential analyses. The  
first analysis is a qualitative judgment as to whether the type of trade or investment  
25 10 (with no consideration of the specific instrument to be bought or sold) is suitable for  
the type of account which the customer holds (with no consideration to the financial  
30 resources or expertise of the customer). For example, a proposed short sale in a  
retirement account would be deemed unsuitable regardless of the instrument being  
35 sold or the wealth of the customer, since uncovered short sales are speculative  
15 trades and any trade considered speculative is generally not suitable for a tax-  
deferred retirement account. Rejection of a trade as unsuitable at this first step will  
40 depend on regulations set by regulatory authorities, the legal documents governing  
the account, and policies set by the SBD or system operator. The qualitative  
analysis is performed using a set of rules in a rule base or a look-up table including,  
45 20 among other rules, a no-uncovered-short-sale-in-retirement-account rule. A series  
of such rules is established and referenced to determine as a threshold matter  
50 whether a trade can be done in the specified account.

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If a trade passes the first analysis, it is then subjected to a quantitative test which compares the Value-At-Risk ("VAR") of the trade to the financial resources of the customer. VAR is the potential loss that might occur, after the trade is settled, if the market moves in an adverse manner. VAR calculations are well-known in the art and are a standard means of quantifying potential trading loss. The VAR's magnitude is customer independent and is compared to the specific customer's financial resources (e.g., income, liquid net worth, total net worth) to determine a TRR value for that customer. Based on preset threshold triggers, the trade is assigned a TRR, where "1" represents the greatest risk of potential harm to wealth and "3" the least risk. The TRR can be refined to take into account other relevant factors, such as the maturity of the bonds versus the customer's stated investment horizon, the outlook for improvement/deterioration of a bond issuer's credit, etc.

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After the TRR is determined, it is compared to the CRR for both the buyer and seller (step 458). The TRR is gauged to the risk rating that was assigned to the particular customer who is seeking approval for the trade. At step 458, the gauge is preferably whether  $CRR \leq TRR$ , although other predetermined relationships can be used. In the automated trade approval routine of FIG. 12, if the customer risk rating is less than or equal to the determined trade risk rating, then the trade can be automatically approved at step 460. Otherwise, the details in the proposed trade ticket trigger an unsuitability warning in the form of a pop-up dialog box, web page, or the like which is displayed to the customer, as at step 462. The warning can

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advise the customer of the potentially high market risk, potential impact on the customer's investment portfolio or other warning.

<u>Customer Risk Rating</u>	<u>Trade Risk Rating</u>	<u>Unsuitability Warning</u>
3	3	No (automatic trade approval)
3	1 or 2	Yes
2	3 or 2	No (automatic trade approval)
2	1	Yes
1	1, 2 or 3	No (automatic trade approval)
R,X	3	No (automatic trade approval)
R,X	1 or 2	Yes

The trade is deemed suitable if the CRR is less than or equal to the TRR (i.e., the customer's ability to withstand risk is greater than the risk associated with the trade). If the trade is suitable for both the buyer and seller it is approved at step 460. Trade confirmation notices are provided to the buyer, seller, and their SBDs (step 476), and trade settlement is scheduled by the system at step 478.

If the trade is deemed unsuitable for one of the parties at step 458, he is alerted to this fact at step 462 with details as to why the trade was deemed unsuitable. Each party is not made aware of any unsuitability determination associated with the other party at this stage.

At step 464, the customer enters a response to the unsuitability warning. The customer can accept the trade as is or cancel it. If the customer elects to accept the

5 trade as is at step 470, despite the unsuitability warning, the customer's having  
overridden the warning is noted on the trade ticket at step 472. In limited  
10 circumstances, a separate confirmation may be required to approve a proposed  
trade with an unusually high amount of risk. If the customer wishes to cancel the  
5 trade as a result of the warning, he or she enters that response at step 464. At step  
15 473, a trade cancellation notice is sent to the other party, the anonymous  
chat/communication link is terminated, and the trade is canceled. The customer is  
20 then returned at step 474 to the customer command input at step 406 of FIG. 7.

25 In the event that the proposed trade was automatically approved at step 460  
10 or the unsuitability warning was overridden at step 464 (with that fact noted at step  
472), the process flow continues by generating a trade confirmation notice at step  
30 476 and the trade is set up for settlement at step 478. Trade settlement includes an  
exchange of cash and securities between the buyer and seller, a charge of a  
35 commission to both, and a credit of a commission to any SBD that was involved in  
15 the trade. The process flow then goes to step 474 to display on the customer's web  
browser the customer command input at step 406 of FIG. 7.

40 With reference now to FIG. 8, links to several different trading pages are  
displayed at the main trading page menu, step 500. Depending on the command  
45 input by customer at step 502, the trading pages for either a street trade, a  
20 customer-to-customer trade, a team trade or some other trade for an SBD to

5 execute are called up and displayed on the customer's web browser. These trading  
10 pages are described in turn.

#### i. Street Trade Trading Pages

15 If the customer selected the street trade trading pages, as determined at step  
5 **504**, then various market makers' lists of instruments (e.g., bonds), their price,  
maturity date, interest rate, coupons, etc. are displayed on the customer's web  
20 browser application. The lists are maintained and are available to the system **100**  
from a data store **508**. Accompanying each listing is further information such as the  
25 credit history of the issuer and other disclosure documents that may be pertinent to  
10 an investment decision, all of which are retrievable electronically through the web  
browser using links **510**. The links are provided to the customer after a selection  
30 has been made from the market makers' lists. The customer can sell or buy the  
selected instrument at steps **512** and **514**, respectively, by completing a trade ticket  
form displayed on his or her web browser and posting it to the system **100**. The  
35 transaction details are extractable (that is, can be obtained) from the trade ticket  
form as digital data.

40 Prior to setting up and executing any trade, the system **100** reviews the  
transaction details in the trade ticket form and seeks confirmation of the trade from  
45 the customer. If the trade is a sale of a particular instrument, the customer must  
20 own the instrument, as determined at step **516**, and if he owns the instrument, the  
50 details of the proposed sales transaction are echoed to the customer for

5 confirmation at step 518. On the other hand, if the customer is seeking to purchase  
a particular instrument, as determined at step 514, the system 100 determines  
10 whether the customer has sufficient funds to do so at step 530, and, if so, the  
transaction details are presented to the customer for confirmation, at step 518. If the  
15 customer confirms the transaction, then the risks attendant with the proposed trade  
and the suitability of the proposed trade for that customer are determined using the  
automated trade approval routine of FIG. 12. As described above, the proposed  
20 trade may be automatically approved if it is "suitable" for the customer or may  
require a customer response to an "unsuitability warning" prior to executing the  
10 trade.

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As can be appreciated from FIG. 8, if: (a) the customer does not own the  
30 instrument that he or she proposes to sell at step 512; (b) does not have sufficient  
funds to buy the proposed instrument at step 514; or (c) declines to confirm the  
transaction details at step 518, then the trade is canceled at step 522. In any of  
35 these circumstances, the trading/services page is redisplayed.  
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#### 40 ii. Team Trade Trading Pages

From the main trading menu (step 500), the team trade trading pages may be  
selected at step 502, as determined and called up onto the customer's web browser  
45 at step 540. Team trading, in accordance with an aspect of the present invention,  
20 permits individual investors to aggregate their respective buy or sell orders for  
execution as a single order of a given quantity of a common financial instrument or  
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5 investment package. An "investment package" may include one or more financial  
instruments, including different types of instruments such as stocks and bonds which  
10 are grouped to satisfy an investment goal of the team.

15 Necessarily, the team members must share an investment goal and agree to  
5 a common investment vehicle. The team trading pages enable this by bringing  
together investors with common interests and permitting them to exchange ideas  
20 and obtain system-provided information relevant to their investment goal, such as,  
for example, specific bonds which according to present market conditions satisfy the  
goal. Team trading provides an alternative to buying or selling from a dealer, and  
25 10 each team member owns the instruments that are purchased and retains  
management control over the investment, rather than owning a share of an  
investment which may be actively managed by someone else or not managed at all.  
Moreover, the fixed transaction costs associated with the team order are far less  
30 than would have been incurred were the individual orders processed separately and  
35 15 are shared by the team members, thus improving the economics to the individual  
investors. A further advantage of a team order is that it is more apt to obtain a better  
40 price as a single large order rather than as many small orders.

45 With reference now to FIG. 9, the team trading pages are displayed at step  
600. The team trading pages constitute a number of pages, and the customer is  
20 presented with different pages depending on what he or she wants to do. The basic  
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choice that must first be made is whether to start a new team or review existing teams and perhaps join and participate in them.

#### a. Starting a Team

A customer starts a team by entering a start-team command at step 604 and thereafter completing a team-start form at step 606. The team-start form specifies, generally, the investment goal that the customer has in mind. The form guides the format of data entry and solicits information such as: the type of issuer (e.g., household name corporation or municipality), the credit quality (e.g., AAA or AA.), the maturity (e.g., 1 or 5 years), and the purpose of the investment (e.g., college education or retirement).

The system operator will establish a team page using the information if there do not already exist team pages which address the customer's stated investment goal, as determined at step 608. In other words, if a need for an additional team is confirmed, then a new team page is created at step 614. Because a number of team pages are provided by the system, each having its own investment goal and investment package (which may comprise only one financial instrument), the customer may be better served by being directed to an existing team, as at step 610, than to be the sole member of a new team. The determination at step 608 causes fewer teams to be created and better ensures that the existing teams are filled.

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Upon creating the new team web page, the system processes the information in the team-start form in view of current market conditions and posts on the team web page the specific instruments which can be purchased in order to reach the investment goal at step **616**. For example, a ten-year protect-principal growth strategy might be best satisfied by a portfolio consisting of 70% 7-10 year A-rated bonds and 30% blue-chip stocks. Preferably, the investment goals are determined automatically and without user intervention. However, a financial advisory professional may review the investment goal and post his or her suggestions at step **616** on the team web page, as a service provided by the firm operating the system **100**. Optionally, the customer can request such guidance by selecting such a feature in the team-start form.

Other customers of the system **100** are notified of the new team at step **618**, for example, by email, by a banner notice to all customers upon logging on to the system, or simply by including the new team web page for display along with the other team web pages (see step **652**).

The customer starting, or any other customers joining, a new team may not be a suitable candidate to participate in the team. At step **620**, the system determines whether the customer has the finances or risk tolerance required for the type of investments that are required to satisfy the team goal. This is done by reviewing the CRR and comparing it to the TRR which is determined for the specific instruments required to meet the investment goal, as described above in connection

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with step **456** of FIG. 12. The suitability test may be as at step **458** of FIG. 12. If the customer is not suitable for the new team, the customer is so advised at step **622** and the process flow goes back to the main team trading page (step **600**). If there are no other team members, the system may eliminate the newly created team or keep it and display the team along with the other team web pages. If the customer is suitable for the new team, he or she is included at step **624** and will thereafter receive pre-trade progress reports at step **626** regarding team issues such as: new members, tentative financial commitments to date, proximity to reaching an institutional-sized round lot, etc.

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From time to time, the system determines at step **628** whether the goals of the team will be met. For example, the goal may include trading by a particular date which does not appear likely due to lack of team members or financial commitment. Because market conditions fluctuate and a team may be undersubscribed by a trade date, the creation of the team at step **614** does not mean that the team will be able to execute a team trade.

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If it turns out that the team goals will not be met, then the team members are advised of this (step **630**) and they must confirm that they wish to continue (step **632**). If the team is to continue, then the team goals are revised at step **616** using updated parameters and analysis by the system **100** and/or financial advisory professional in view of any changes in market conditions. On the other hand, if the

5 team members do not wish to continue with the team, then at step 634 the team is  
10 canceled.

15 As the trade date approaches and the team goals can be met (as determined  
at step 628), then the final financial commitments of the team members are obtained  
5 or collected at step 636 to aggregate sufficient funds to implement a single larger  
trade; preferably an institutional-sized round lot trade. Each customer can specify  
20 his or her investment in terms of total amount of dollars to be invested (which may  
result in the ownership of fractional bonds) or in terms of face amount of whole  
bonds. Each customer specifies his or her respective commitment by posting that  
25 commitment to the system, for example, in response to a notice from the system that  
10 financial commitments are now required to participate in the team trade. Once a  
commitment is made and a team trade has not been aborted, the customer's  
30 committed funds are unavailable for other use. Preferably, a team is fully subscribed  
when at least an institutional-sized order is achieved. An over-subscribed team may  
35 be cut-back to a predetermined size on a first-come-first served basis; however, a  
15 team can be cut-back on a pro-rata basis to reduce the investment amount to a  
targeted investment amount. Alternatively, the target can be raised to accommodate  
40 the demand for that team investment.

45 Thereafter, at step 638, the team is closed and the trade executed, at step  
20 640. Once the trade has been executed, it is settled by allocating the ownership and  
cost among the team members, at step 642. For a bond purchase, funds are taken  
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5 from each team member's accounts in an amount up to his or her respective  
10 financial commitment (plus, perhaps, an additional amount for commissions), and a  
15 number of financial instruments, including any fractional portions, are allocated to  
5 each team member's account in a proportionate share of the quantity of financial  
10 instrument(s) that was just purchased. The proportionate share of the quantity  
15 purchased is the amount charged to each customer divided by the total cost for the  
20 trade, exclusive of commissions. Because each customer now owns the financial  
25 instruments that were purchased, the team has no further purpose, and each  
customer can retain or sell the instruments at his or her own discretion. For a team  
10 bond sale, an analogous process occurs.

30 It should be understood that the time between creating a team at step 614  
and a team trade being executed at step 640 is on the order of one or two days up  
to about two weeks. If financial commitments are made but the trade is not  
35 executed by a settlement date, for example, the commitment is discharged and the  
15 funds in the customer's account will then be available for other use. Alternatively,  
funds are restricted only when a customer is given notice that the trade is to be  
40 executed.

#### 45 b. Joining And Participating In An Existing Team

From the main team trading page 600, customers can review a list of existing  
20 teams to find one of interest by entering the review-existing-teams command at step  
50 650. This command displays at the customer's web browser a list of existing teams

5 at step 652. In addition, the customer may enter a search query to search for a  
particular team using a standard website search engine. Once a team page of  
10 interest has been located in the list, it is displayed at step 610. The customer  
interacts with the team page by selecting it at step 612. The system determines at  
5 step 654 whether the customer is a member of the team already, and, if so, the  
customer may exchange messages, chat or obtain updated parameters that may be  
15 posted from time-to-time by the system operator, at step 656. Through the team  
web page, team members exchange ideas, discuss important topics and debate  
20 differences of opinion prior to making a team trade. The forum provided at the web  
page fosters a sense of community among the team members and better ensures  
25 that the members are all striving for a common investment goal.

30 If the customer is not a team member already, he or she can request to join  
the team at step 658, and will be joined if suitable, as determined at step 620, or  
advised that he or she cannot join, at step 622, as described above. If the customer  
35 is included in the team at step 624, the process flow continues from that step as  
previously described. Specifically, he or she will be provided with pre-trade progress  
40 reports, including whether the goals will be met, and if so, financial commitments will  
be collected so that the trade can be executed.

### 45 iii. Customer To Customer ("C2C") Trading Pages

20 From the main trading menu 500, the customer can also select customer-to-  
customer (C2C) trading pages at step 502. In response, the system 100 directs the  
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5 customer to the C2C trading pages at step 544. In accordance with this aspect of  
the invention, one customer trades directly with another for the instrument that he or  
10 she wishes to purchase or sell without an intermediate broker. This direct customer-  
to-customer trading is done anonymously to maintain customer privacy. When  
15 coupled with the automated trade approval routine, customers can directly trade with  
one another through the system 100 without any human intervention in the  
transaction, thereby reducing commission charges and fees.

20 With reference now to FIG. 10, the C2C trading pages are displayed on the  
customer's web browser at step 700. The C2C trading pages are described in the  
25 context of bond trading, but it should be understood that the C2C concept applies to  
10 trading of other financial instruments such as stocks, stock options and other  
financial and derivative instruments. Also, customers can be individuals, institutions,  
30 or brokers. Further, fractional bonds or portions of other financial instruments may  
be bought and sold through the C2C trading pages.

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15 The C2C trading pages of FIG. 10 include "bonds for sale" lists and "bonds  
wanted" lists. The "bonds for sale" list includes a list of those bonds that are held by  
40 a customer which are available for direct sale to another customer. The "bonds  
wanted" list includes those bonds, or types of bonds, that particular customers are  
45 interested in purchasing.



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At step 702, a customer elects to either buy or sell a bond. The "bonds for sale" list is displayed at step 704 if the customer has elected to buy a bond. At step 706, the customer either purchases a bond selected from the "bonds for sale" list, or posts a bond that he or she wants to purchase. Prior to purchasing a bond that has been "listed" by another customer, links are displayed at step 708 to further information concerning the selected bond. After reviewing that information, the customer must confirm his or her desire to make the purchase, at step 710. If the customer decides not to purchase that bond, the "bonds for sale" list is again displayed (step 704); otherwise, the customer qualifications for negotiating the trade with the customer who listed the bond (the "listing customer") is determined. Specifically, the system 100 confirms that the buy-side customer has sufficient funds at step 712 by examining the customer's account to determine how much cash is available, and perhaps how much credit can be extended in any associated margin account. The system also confirms that the purchase is suitable for that customer at step 714 by examining the customer's ability to withstand the potential loss of principal inherent in the investment, substantially as described above in connection with steps 454 through 458 of FIG. 12. If the customer can afford the trade and tolerate the risk, the negotiation pages are called up at step 716. The negotiation pages are described below in connection with FIG. 11. However, if either of the tests at steps 712 and 714 fails, the "bonds for sale" list is again displayed to the customer so that a different selection can be made.

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It may be that the customer reviewing the "bonds for sale" list does not find a listed bond of interest. In that case, the C2C trading pages permit the customer to post the bond(s) he or she wants to purchase on a "bonds wanted" list. The bonds wanted list complements the bonds-for-sale list and creates demand for such bonds that otherwise may not exist in any current system. A bond is posted to the "bonds wanted" list at step 720 by completing a bonds-wanted form. Each entry in the "bonds wanted" list is generated in response to a customer having completed a bonds-wanted form at the client-side browser and submitting (posting) the form to the server 100. The server then updates the "bonds wanted" web page using the information in the completed form. Likewise, entries into the "bonds for sale" list are made by a prospective seller completing a bonds-for-sale form, as described below.

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Prior to updating the "bonds wanted" list, the system 100 confirms that the customer submitting the form has sufficient cash and is a suitable purchaser at steps 722 and 724, substantially as described above in connection with step 712 and 714. If the proposed purchase transaction is beyond the means of or is not suitable for that customer, the proposed posting is canceled and the "bonds for sale" list is displayed again, at step 704. Otherwise, the posting is added to the "bonds wanted" list at step 726 and an ID is assigned to that customer and associated with the new posting at step 728. Thereafter, a next customer command is obtained at step 406 of FIG. 7, for example, to obtain other information, obtain financial planning services, or monitor or implement other trades.

5 As noted above, the customer can elect to sell a bond at step 702. In this  
case, the "bonds wanted" list is displayed at step 740 from which the seller selects  
10 and reviews a buyer's posting of a bond wanted to purchase. The prospective seller  
can select a listed bond wanted for purchase, at step 742, and review the details  
5 posted by the buyer as well as any comments that were provided, at step 744. The  
15 prospective seller makes a determination of whether to sell his or her bond(s) at step  
746. If the seller decides that he does not want to sell his bond based on the  
20 buyer's posting, then the seller is returned to the display of the "bonds wanted" list at  
step 740. Otherwise, the seller identifies a bond in his portfolio at step 748 and the  
10 transaction proceeds to negotiation at step 750 (see FIG. 11).

25  
30 Optionally, for any detailed listing in the "bonds wanted" list, the system 100  
can determine whether any customer has the listed bond in his or her portfolio, and if  
so, can identify to the customer which listings in the "bonds wanted" list are in his or  
her portfolio. This may occur automatically or in response to a user request.

35  
40 15 Alternatively, the prospective seller can add a bond from his or her portfolio to  
the "bonds for sale" list. By completing and submitting a bonds-for-sale form, the  
seller posts the bond on the "bonds for sale" list at step 760. The server then  
updates the bonds-for-sale web page. If the system 100 determines that the bond  
45 is owned by the sell-side customer at step 762, then the posting is added to the list  
at step 764 and is displayed to prospective purchasers who elect to "buy" bonds at  
20 step 702. In addition, the seller is assigned an ID at step 766 which is associated  
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5 with the newly listed bond. Thereafter, the customer is returned to the command  
prompt at step 406 of FIG. 7.

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15 It should be understood from the foregoing that prospective purchasers add  
to the "bonds wanted" list and prospective sellers add to the "bonds for sale" list by  
5 navigating the C2C trading pages in the manner described above and shown in FIG.  
10.

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25 Preferably, the identities of listing customer on the one hand and the  
prospective buyer or seller on the other hand are concealed. That is, buyers looking  
to buy a bond from the "bonds for sale" list and sellers looking to sell a bond listed  
10 on the "bonds wanted" list do not know each other's identities. Instead, the  
30 negotiation between the two customers proceeds anonymously, using identifiers that  
are assigned to the listing customer (at step 728 or step 766) and to the prospective  
buyer/seller at step 810 of FIG. 11, discussed next.

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40 With reference now to FIG. 11, the negotiation pages are called up in  
15 response to a customer's interest in buying or selling a "listed" instrument, that is, a  
bond which is listed on the "bonds for sale" or "bonds wanted" lists. At step 810, the  
customer who is responding to a listed bond is assigned an ID for that transaction.  
45 The system 100 establishes a communication link (including an exchange of  
assigned IDs) between the two customers. In particular, if a customer is responding  
50 to a "bonds for sale" listing, then the ID is assigned to the prospective buyer (the

5 "buy-side customer") and, if the customer is responding to a "bonds wanted" listing,  
then the ID is assigned to the prospective seller (the "sell-side customer"). At step  
10 820, the fair value of the bond is determined by the system 100 using an online  
calculator. The fair value is reported to the two parties to the proposed trade as a  
5 base line comparison value to guide the customers to a fair trade. The fair value of  
15 the listed bond is calculated in light of the trade date, settlement date, accrued  
interest and appropriate Treasury yield.

20 At step 830, anonymous communication between the two customers, namely,  
the buyer and seller, proceeds on the Internet using the IDs that were assigned to  
25 them. The goal of the anonymous communication is to negotiate and ultimately  
10 agree upon price. The negotiations transpire within a secure portion of the system  
website. When each of the parties to the trade believes that they have come to an  
30 agreement, including an agreement as to price, then at step 840 the parties are  
provided with a trade ticket form to complete online. Each party submits (posts) his  
35 or her respective trade ticket form and the system determines at step 842 whether  
15 the terms from the two trade tickets match. If the tickets do not match, then the  
buyer and seller are advised of the discrepancy at step 844 and communications  
40 may again proceed as at step 830 to correct the discrepancy or cease negotiations.

45 If the terms do match, however, then, in accordance with a further aspect of  
20 the invention, the fairness of the agreed upon terms to both parties is assessed  
automatically and without manual intervention, at step 846. Specifically, the system  
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100 ensures that customer-to-customer trades are made at a "fair" price which is between bid and offer price quotes from odd lot dealers and third party services such as BondTrac and Bond Express dealing in the same or comparable bonds. That is, a "fair" price is one which falls between two objectively determinable limits. Such prices are what customers would experience if they were bought or sold outside the system 100 and is competitive with the traditional pricing that customers would be advised of when using a conventional dealer to handle their order. This objective measure protects the buyer from over-paying and the seller from excessive discounting, and is made by comparing the price in the completed trade ticket to the price quote from such dealers and/or third party services. Further, the system 100 encourages C2C trades to be made at a price which is similar to a price quote for the same or comparable bonds in institutional-sized round lots that can be received from institutional dealers or by monitoring new issuance levels and third party dealer screens (e.g., Telerate) which show the secondary institutional trading levels for actively traded bonds. Each of these comparisons and the determination of whether a price is fair at step 846 relies upon data from one or more information sources 848 that are connected to or accessed by the system 100. The term "comparable bond" as used herein refers to a bond which has similar characteristics such as type and credit quality of the issuer, maturity, interest rate, etc.

20 If the price is not deemed fair, then the buyer and seller are advised of this discrepancy at step 844 and the anonymous communications between the buyer and seller can again proceed at step 830. This mechanism ensures that one

5 customer does not take advantage of another in a direct trade. However, if the price  
is determined to be fair (or if buyer and seller both agree to the negotiated price),  
10 then at step 850 the buyer and seller are notified that the trade can be executed and  
the system obtains the confirmation from both that the trade is to be executed in  
5 accordance with the trade tickets at step 852. Thereafter, the trade may be  
executed and subsequently settled as at step 854 in a conventional manner, or  
execution and trade settlement may include the automated trade approval routine of  
20 FIG. 12.

### 25 c. Other Services

10 In addition to the financial planning services and trading web sites, the  
customer can select other functions and services by entering a suitable command at  
30 step 406, as shown at step 424, such as bond calculators and IRA analyzers.  
These other services are not material to the present invention and are thus not  
described in detail.

### 15 3. Data Entry Forms

40 Various forms are used in the process flows and methods of the present  
invention, including a trade details form, a team-start form, a bonds-wanted form,  
and a bonds-for-sale form. Exemplary forms for entering this information and web  
45 pages are shown in FIGS. 13 through 20.

5 With reference first to FIG. 13, the transaction details of a completed trade  
made by a purchasing customer are listed in the illustrated trade ticket. The  
10 transaction details in the trade ticket are conveyed to the customer over the Internet  
in any conventional secure manner. The transaction details may include many or all  
5 of the following: the trade number **1002** (which is common to the buy and sell sides  
of the transaction and generated by the system for tracking and internal audit  
purposes), the buying customer's account number **1004**, the status of the trade **1006**  
20 (filled, partially filled, open, pending cancellation, etc.), which side of the transaction  
the customer was on **1008** (buy or sell side), the amount of the instrument  
10 purchased **1010**, the name of the instrument **1012**, the type of the instrument **1014**  
25 (bond, stock, option), the CUSIP number **1016** for that instrument, the execution  
method **1018** (e.g., street trade, C2C, team trade), conditions on the trade **1020**  
30 (market order, limit order) and values **1022**, **1024** on the conditions (e.g. price or  
time limits), the time of the order **1026**, the trade date **1028**, the settlement date  
15 **1030**, the price **1032**, the accrued interest **1034**, if any, the gross amount of the  
35 trade **1036**, the commission **1038**, any SEC fee **1040**, any tax **1042**, any further  
service charge **1044**, the net amount of the transaction **1046**, the market in which  
40 the trade was executed **1048** (e.g., C2C, NASDAQ, NYSE, etc.), and the SBD that  
was involved in the trade **1050**. Depending on the security type **1014**, some of the  
20 fields in the trade ticket may be empty or not provided to the customer because they  
45 are not relevant (e.g., there is no accrued interest in a purchase or sale of stock).



5 In FIG. 14, an exemplary "team investing" web page **1100** is displayed, such  
as is displayed at step **600**. A selection of teams are available in an active teams list  
10 **1102**, for the customer to choose from. The active teams list in FIG. 14 includes one  
active team, team number T01123 called "The Broke Parents Club." The active  
5 teams list includes data fields which identify for each team the team's investment  
goal **1104**, the number of members the team currently has **1106**, the extent of  
15 current commitments **1108**, and the target date for the trade **1110**. Further  
information on each team can be obtained by click-selecting the team, for example,  
20 by clicking on the team name field **1112** for a particular team. The customer can  
also start a new team by clicking hyperlinked-text such as the "Click here to Start a  
25 New Team" text **1114**.

30 If the customer wishes to start a new team, then the team-start form referred  
to above at step **606** is displayed at the customer's computer, that is in his or her  
browser or application software. An exemplary team-start form **1200** is illustrated in  
35 FIG. 15 and provides various fields in which customers name the proposed team  
**1202**, define the action of the team (to buy or sell or implement a particular strategy)  
**1204**, define the team goal field **1206**, define their financial commitment **1208**, state  
40 a trade date **1210**, and provide customer identifying information **1212**. The team-  
start form **1200** can be cleared using button **1214** or submitted using button **1216**.

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20 In connection with customer-to-customer trading, bonds-wanted and bonds-  
50 for-sale lists are displayed to customers from which a bond can be selected for

trading. If the bond is not included on one of these lists, a "bonds wanted" or "bonds for sale" notice can be posted by a customer for inclusion in the appropriate list.

With reference now to FIG. 16, the display of the "bonds for sale" list, as referred to above at step 704, may comprise a display such as the web page 1300.

One or more bonds for sale are listed in a table which identifies, among other information, the issuer 1302, the amount 1304, the rating 1306, coupon 1308, maturity 1310, call date 1312, call price 1314, and the seller by way of an encoded identifier 1316 known only to the system operator. A customer interested in purchasing a bond listed on the bonds for sale web page 1300 clicks the seller's identifier 1316 to begin negotiations. Of course, any row entry in the bonds for sale list can be click-selected to initiate negotiations, and negotiations proceed after the process steps of FIG. 10 described above. In the event that the customer does not see a bond that he or she wishes to buy from the list, a "bonds wanted" notice can be posted by clicking a button or hypertext-link, such as the hypertext 1318.

In like manner, the "bonds wanted" list referred to above at step 740, may comprise a display such as the web page 1400 of FIG. 17. One or more bonds wanted are listed in a table which identifies, among other information, the issuer 1402, the amount 1404, a rating range 1406, a coupon range 1408, a maturity range 1410, whether the bond is callable 1412, and the buyer by way of an encoded identifier 1416 known only to the system operator. A customer interested in selling a bond which is listed on the bonds wanted web page 1400 clicks the buyer's identifier

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**1416** or another row entry to begin negotiations, with negotiations proceeding as described in connection with FIG. 10. In the event that the customer does not see a bond that he or she wishes to buy from the list, a "bonds for sale" notice can be posted by clicking a button or hypertext-link, such as the hypertext **1418**.

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FIG. 18 illustrates an exemplary "bonds for sale" form **1500** which includes fields **1502-1516** that correspond to fields **1302-1316**, respectively. The seller-id field **1516** obtains the selling customer's name, account number and e-mail address, but none of this information is posted in the seller-ID field **1316**. Instead, as described at step **766**, a seller-ID is assigned and included in the seller-ID field **1316**. Erroneous entries can be cleared using a reset button **1518**, and the bonds-for-sale form **1500** is submitted using a post form button **1520**.

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FIG. 19 illustrates an exemplary "bonds wanted" form **1600** which includes fields **1602-1616** that correspond to fields **1402-1416**, respectively. The buyer-ID field **1616** obtains the buying customer's name, account number and e-mail address, but none of this information is posted in the buyer-ID field **1416**. Instead, as described at step **728**, a buyer-ID is assigned and included in the buyer-ID field **1416**. Erroneous entries can be cleared using a reset button **1618**, and the bonds-wanted form **1600** is submitted using a post form button **1620**.

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FIG. 20 illustrates an order form by which the customer enters information to execute a trade, for example, a street trade, a customer to customer trade, or a team

5 trade. For C2C and team trades, the customer is assigned a coded identifier, as  
described above. The order form includes standard fields which form no part of the  
10 present invention. The actual fields that are provided to the customer may be  
tailored to the specific type of transaction to be made. Thus, for example, only fields  
5 related to bonds are displayed if the customer has entered the bond trading pages.

Briefly, the form 1700 may include one or more of the following fields, which  
20 may require data to be typed in or a button switch to be set: customer account  
number 1704, the side of the transaction 1708, the amount to be spent 1710,  
whether the customer will accept less, any minimum amount and increment 1711a,  
25 1711b, and 1711c, respectively, the type of instrument to be traded 1714, the price  
1720, and any limits on price 1722, including a stop price 1723, and any limits on  
30 time 1724. Depending on whether the instrument to be traded is a bond, stock or  
stock option, further information is provided into the order form to identify the bond or  
security to be traded: coupon, callability, etc. if a bond; and the strike price and strike  
35 date if an option, as shown in FIG. 20.

40 Many of the web sites and processes require secure communications  
between the server 100 and the customer 106,116. This is achieved in a  
conventional manner by providing a secure socket layer (SSL) connection between  
45 the customer's web browser and the server 100. If an SBD 110 is interposed  
20 between the customer 116 and the server 100, then the SSL connection extends  
50 from the customer 116, through the SBD, to the server 100.

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The principles of the present invention apply to various financial markets other than the bond markets, the presently preferred application. For example, the invention can be used to facilitate trades in stock, option, commodity and derivatives markets to automate trade approvals, execute C2C transactions, perform group trades and implement other features described above. To implement the invention in other markets, regulatory requirements may demand that further steps be taken such as reporting trades in a timely manner or routing trades to the appropriate exchange (e.g., to the commodities exchange that handles a particular commodities trade); however, such steps form no part of the present invention.

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The present invention, therefore, provides a bond trading system which permits individuals to own bonds directly through a cost effective trading system, which makes short-term bonds an attractive alternative to cash-on-hand for the individual investor, and which provides an expert system for effectuating automated trade approvals for each trade of each individual investor.

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While the invention has been described in detail with particular reference to certain embodiments thereof, the invention is capable of different embodiments and its details are capable of modifications in various obvious respects. As would be readily apparent to those skilled in the art, variations and modifications can be affected while remaining within the spirit and scope of the invention. Accordingly, the foregoing disclosure, description, and Figures are for illustrative purposes only,

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and do not in any way limit the invention, which is defined only by the claims.

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## Claims

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What is claimed is:

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1. A system for facilitating securities trading comprising:

a computer;

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a customer rules database accessible by said computer;

a set of customer risk assessment rules stored on said customer rules

5 database;

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software executing on said computer for receiving customer information from a customer, for retrieving said set of customer risk assessment rules from said customer rules database, and for assigning a customer risk rating to the customer based upon the received customer information and said set of customer risk assessment rules;

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10 a trade rules database accessible by said computer;

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a set of trade risk assessment rules stored on said trade rules database;

software executing on said computer for receiving trade details from a customer for a proposed trade, for retrieving said set of trade risk assessment rules from said trade rules database, and for assigning a trade risk rating to the proposed trade based

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15 upon the received trade details and said set of trade risk assessment rules; and

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software executing on said computer for automatically approving the proposed trade if the customer risk rating and the trade risk rating bear a predetermined relationship to one another.

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2. The system for facilitating securities trading of Claim 1 wherein the customer risk rating and the trade risk rating comprise numerical indications of associated risk.

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3. The system for facilitating securities trading of Claim 2 wherein the predetermined relationship between the customer risk rating and the trade risk rating for receiving automatic approval of the proposed trade is that the customer risk rating be no greater than the trade risk rating.

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4. The system for facilitating securities trading of Claim 1 wherein the system determines the customer risk rating, and evaluates the relationship between the customer risk rating and the trade risk rating, for each party to the proposed trade.

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5. The system for facilitating securities trading of Claim 1 further comprising:  
a customer risk rating database accessible by said computer; and  
software executing on said computer for storing the customer risk rating assigned to the customer on said customer risk rating database, and for retrieving the stored customer risk rating for the customer each time that customer attempts to participate in a trade, such that the customer risk rating for each customer must only be assigned once.

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6. The system for facilitating securities trading of Claim 1 wherein the customer risk rating is indicative of the financial resources of and the investment experience of the customer.

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7. The system for facilitating securities trading of Claim 1 wherein the trade risk rating is indicative of the underlying economic risks associated with an instrument which is the subject of the proposed trade.

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8. The system for facilitating securities trading of Claim 1 further comprising software executing on said computer for automatically generating and transmitting to the customer a warning regarding the proposed trade if the customer risk rating and the trade risk rating do not bear a predetermined relationship to one another, and for automatically approving the proposed trade if an override indication is received from the customer.

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9. A system for facilitating securities trading comprising:

a computer;

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software executing on said computer for allowing the formation of a team comprising a plurality of team members;

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software executing on said computer for enabling team members to determine a quantity of a financial instrument to be purchased in a single trade by the team;

software executing on said computer for obtaining a financial commitment from each of the team members;

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software executing on said computer for automatically purchasing in a single trade the quantity of the financial instrument, the quantity having a total cost which is no greater than the sum of the obtained financial commitments;

5 software executing on said computer for charging an account of each of the  
team members in an amount up to each team member's respective financial  
10 commitment; and

15 software executing on said computer for crediting the account of each of the  
team members with a share of ownership proportionate to the amount charged to  
15 each team member's account of the quantity of the financial instrument purchased.

20 10. The system for facilitating securities trading of Claim 9 further comprising a  
teams database accessible by said computer, said teams database having information  
25 regarding a plurality of existing teams stored thereon, including an indication of each  
team's investment objectives, and wherein the software executing on said computer  
5 for allowing the formation of a team comprising a plurality of team members  
30 comprises:

software executing on said computer for receiving from a customer an  
indication of customer investment objectives;

35 software executing on said computer for determining if the indication of  
10 customer investment objectives matches the investment objectives of an existing  
40 team;

software executing on said computer for allowing the customer to join an  
existing team which has investment objectives which match the customer investment  
45 objectives; and

5

15 software executing on said computer for allowing the customer to create a new  
team if the customer investment objectives do not match the investment objectives of  
10 any of the existing teams.

15

11. The system for facilitating securities trading of Claim 10 wherein the investment  
objectives comprise indications of the type of financial instrument issuer, the credit  
quality of the financial instrument, the maturity date of the financial instrument, and the  
20 purpose of the investment.

20

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12. The system for facilitating securities trading of Claim 9 further comprising  
software executing on said computer for allowing anonymous communication between  
team members.

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13. The system for facilitating securities trading of Claim 9 further comprising:

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a customer rules database accessible by said computer;

a set of customer risk assessment rules stored on said customer rules  
database;

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5 software executing on said computer for receiving customer information from  
each of the team members, for retrieving said set of customer risk assessment rules  
from said customer rules database, and for assigning a customer risk rating to each of  
45 the team members based upon the received customer information and said set of  
customer risk assessment rules;

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10 a trade rules database accessible by said computer;

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a set of trade risk assessment rules stored on said trade rules database;  
software executing on said computer for determining trade details of the  
financial instrument, for retrieving said set of trade risk assessment rules from said  
trade rules database, and for assigning a trade risk rating to the proposed trade based  
upon the trade details and said set of trade risk assessment rules; and  
software executing on said computer for automatically approving membership  
in the team for each team member if the customer risk rating for each team member  
and the trade risk rating bear a predetermined relationship to one another.

14. The system for facilitating securities trading of Claim 13 wherein the customer  
risk rating and the trade risk rating comprise numerical indications of associated risk.

15. The system for facilitating securities trading of Claim 14 wherein the  
predetermined relationship between the customer risk rating and the trade risk rating  
for receiving automatic approval of membership in the team is that the customer risk  
rating be no greater than the trade risk rating.

16. The system for facilitating securities trading of Claim 13 further comprising:  
a customer risk rating database accessible by said computer; and  
software executing on said computer for storing the customer risk rating  
assigned to the customer on said customer risk rating database, and for retrieving the  
stored customer risk rating for the customer each time that customer attempts to join a

5 team, such that the customer risk rating for each customer must only be assigned  
10 once.

17. The system for facilitating securities trading of Claim 13 wherein the customer  
15 risk rating is indicative of the financial resources of and the investment experience of  
the customer.

20 18. The system for facilitating securities trading of Claim 13 wherein the trade risk  
rating is indicative of the underlying economic risks associated with the financial  
25 instrument.

30 19. The system for facilitating securities trading of Claim 13 further comprising  
software executing on said computer for automatically generating and transmitting to  
the customer a warning regarding membership in the team if the customer risk rating  
35 and the trade risk rating do not bear a predetermined relationship to one another, and  
5 for automatically approving membership in the team if an override indication is  
received from the customer.

40 20. A system for facilitating securities trading comprising:

a computer;

45 software executing on said computer for receiving an indication from a seller  
that the seller desires to sell a financial instrument and an indication from a buyer that  
50 5 the buyer desires to purchase the financial instrument;

5

software executing on said computer for notifying the buyer and the seller of a proposed trade and for allowing for negotiation between the buyer and the seller;

10

software executing on said computer for determining a fair market value of the financial instrument, and for transmitting the fair market value to the buyer and the

15

10 seller;

software executing on said computer for receiving a buyer trade ticket from the buyer and a seller trade ticket from the seller and for determining that the terms of the buyer trade ticket match the terms of the seller trade ticket;

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software executing on said computer for determining, if the terms of the buyer trade ticket match the terms of the seller trade ticket, whether the terms of the proposed trade are fair; and

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software executing on said computer for automatically executing the trade if the terms are fair.

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21. The system for facilitating securities trading of Claim 20 further comprising software executing on said computer for, if the terms of the buyer trade ticket do not match the terms of the seller trade ticket, generating and transmitting to the buyer and the seller a notification that the terms do not match, and for allowing further negotiation between the buyer and the seller.

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22. The system for facilitating securities trading of Claim 20 further comprising software executing on said computer for, if the terms of the proposed trade are not

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5 fair, generating and transmitting to the buyer and the seller a notification that the terms  
10 are not fair, and for allowing further negotiation between the buyer and the seller.

15 23. The system for facilitating securities trading of Claim 20 wherein the fair market  
value of the financial instrument is dependent upon a trade date, a settlement date,  
accrued interest of the financial instrument and the treasury yield.

20 24. The system for facilitating securities trading of Claim 20 wherein said software  
for determining whether the terms of the proposed trade is fair determines that the  
25 terms are fair if the terms include a price which falls between a current quoted price for  
an institutional-size round lot and a prevailing price on the odd lot market for financial  
5 instruments comparable to the financial instrument which is the subject of the  
30 proposed trade.

35 25. The system for facilitating securities trading of Claim 20 further comprising:  
a customer rules database accessible by said computer;  
a set of customer risk assessment rules stored on said customer rules  
40 database;

5 software executing on said computer for receiving customer information from  
the buyer, for retrieving said set of customer risk assessment rules from said customer  
45 rules database, and for assigning a customer risk rating to the buyer based upon the  
received buyer customer information and said set of customer risk assessment rules;  
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10 software executing on said computer for receiving customer information from  
the seller, for retrieving said set of customer risk assessment rules from said customer  
10 rules database, and for assigning a customer risk rating to the seller based upon the  
received seller customer information and said set of customer risk assessment rules;  
15 a trade rules database accessible by said computer;  
a set of trade risk assessment rules stored on said trade rules database;  
15 software executing on said computer for receiving trade details for the  
20 proposed trade, for retrieving said set of trade risk assessment rules from said trade  
rules database, and for assigning a trade risk rating to the proposed trade based upon  
the received trade details and said set of trade risk assessment rules; and  
25 software executing on said computer for automatically approving the proposed  
20 trade if each of the buyer and seller customer risk ratings and the trade risk rating bear  
30 a predetermined relationship to one another.

35 26. The system for facilitating securities trading of Claim 25 wherein the buyer and  
seller customer risk ratings and the trade risk rating comprise numerical indications of  
associated risk.

40 27. The system for facilitating securities trading of Claim 26 wherein the  
predetermined relationship between the buyer and seller customer risk ratings and the  
45 trade risk rating for receiving automatic approval of the proposed trade is that each of  
the buyer and seller customer risk ratings be no greater than the trade risk rating.  
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28. The system for facilitating securities trading of Claim 25 further comprising:  
a customer risk rating database accessible by said computer; and

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software executing on said computer for storing the customer risk ratings

assigned to the buyer and seller on said customer risk rating database, and for

15

5 retrieving the stored customer risk rating each time that customer attempts to  
participate in a trade, such that the customer risk rating for each customer must only  
be assigned once.

20

29. The system for facilitating securities trading of Claim 25 wherein the customer  
risk rating is indicative of the financial resources of and the investment experience of  
the customer.

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30. The system for facilitating securities trading of Claim 25 wherein the trade risk  
rating is indicative of the underlying economic risks associated with an instrument  
which is the subject of the proposed trade.

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31. The system for facilitating securities trading of Claim 25 further comprising  
software executing on said computer for automatically generating and transmitting a  
warning regarding the proposed trade if the customer risk rating and the trade risk  
rating do not bear a predetermined relationship to one another, and for automatically  
5 approving the proposed trade if an override indication is received from the customer.

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32. The system for facilitating securities trading of Claim 31 wherein the warning is  
transmitted only to the customer whose customer risk rating does not bear the  
10 predetermined relationship with the trade risk rating.

15 33. A method for facilitating securities trading comprising the steps of:  
providing a computer;  
providing a customer rules database accessible by the computer;  
20 storing a set of customer risk assessment rules on the customer rules  
5 database;

25 receiving customer information from a customer, retrieving the set of customer  
risk assessment rules from the customer rules database, and assigning a customer  
risk rating to the customer based upon the received customer information and the set  
30 of customer risk assessment rules;

10 providing a trade rules database accessible by the computer;  
storing a set of trade risk assessment rules on the trade rules database;  
35 receiving trade details from a customer for a proposed trade, retrieving the set  
of trade risk assessment rules from the trade rules database, and assigning a trade  
40 risk rating to the proposed trade based upon the received trade details and the set of  
15 trade risk assessment rules; and

45 automatically approving the proposed trade if the customer risk rating and the  
trade risk rating bear a predetermined relationship to one another.

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34. The method for facilitating securities trading of Claim 33 wherein the customer risk rating and the trade risk rating comprise numerical indications of associated risk and said automatically approving step comprises the step of automatically approving the proposed trade if the customer risk rating is no greater than the trade risk rating.

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35. The method for facilitating securities trading of Claim 33 wherein the customer risk rating is determined, and the relationship between the customer risk rating and the trade risk rating is evaluated, for each party to the proposed trade.

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36. The method for facilitating securities trading of Claim 33 further comprising the steps of:

providing a customer risk rating database accessible by the computer; and

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storing the customer risk rating assigned to the customer on the customer risk

5 rating database; and

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retrieving the stored customer risk rating for the customer each time that customer attempts to participate in a trade, such that the customer risk rating for each customer must only be assigned once.

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37. The method for facilitating securities trading of Claim 33 further comprising the steps of:

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automatically generating and transmitting to the customer a warning regarding the proposed trade if the customer risk rating and the trade risk rating do not bear a

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5 predetermined relationship to one another; and

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5 automatically approving the proposed trade if an override indication is received  
10 from the customer.

15 38. A method for facilitating securities trading comprising the steps of:

providing a computer;

allowing the formation of a team comprising a plurality of team members;

determining a quantity of a financial instrument to be purchased in a single

20 5 trade by the team;

obtaining a financial commitment from each of the team members;

25 automatically purchasing in a single trade the quantity of the financial  
instrument, the quantity having a total cost which is no greater than the sum of the  
obtained financial commitments;

30 10 charging an account of each of the team members in an amount up to each  
team member's respective financial commitment; and

35 crediting the account of each of the team members with a share of ownership  
proportionate to the amount charged to each team member's account of the quantity  
of the financial instrument purchased.

40 39. The method for facilitating securities trading of Claim 38 further comprising the  
step of providing a teams database accessible by the computer, the teams database  
45 having information regarding a plurality of existing teams stored thereon, including an  
indication of each team's investment objectives, and wherein the allowing the

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5 formation of a team comprising a plurality of team members step comprises the steps  
10 of:

10 receiving from a customer an indication of customer investment objectives;  
determining if the indication of customer investment objectives matches the  
15 investment objectives of an existing team;

10 allowing the customer to join an existing team which has investment objectives  
which match the customer investment objectives; and

20 allowing the customer to create a new team if the customer investment  
objectives do not match the investment objectives of any of the existing teams.

25 40. The method for facilitating securities trading of Claim 38 further comprising the  
step of allowing anonymous communication between team members.

30 41. The method for facilitating securities trading of Claim 38 further comprising the  
steps of:

35 providing a customer rules database accessible by the computer;  
storing a set of customer risk assessment rules on the customer rules

40 5 database;

receiving customer information from each of the team members, retrieving the  
set of customer risk assessment rules from the customer rules database, and  
45 assigning a customer risk rating to each of the team members based upon the  
received customer information and the set of customer risk assessment rules;

50 10 providing a trade rules database accessible by the computer;

5 storing a set of trade risk assessment rules on the trade rules database;  
10 determining trade details of the financial instrument, retrieving the set of trade  
risk assessment rules from the trade rules database, and assigning a trade risk rating  
to the proposed trade based upon the trade details and the set of trade risk

15 assessment rules; and  
automatically approving membership in the team for each team member if the  
customer risk rating for each team member and the trade risk rating bear a  
20 predetermined relationship to one another.

25 42. The method for facilitating securities trading of Claim 41 wherein the customer  
risk rating and the trade risk rating comprise numerical indications of associated risk  
and wherein said automatically approving step comprises the step of approving  
30 membership in the team for each team member if the customer risk rating for each  
5 team member is no greater than the trade risk rating.

35 43. The method for facilitating securities trading of Claim 41 further comprising the  
steps of:

40 providing a customer risk rating database accessible by the computer;  
storing the customer risk rating assigned to the customer on the customer risk  
5 rating database; and

45 retrieving the stored customer risk rating for the customer each time that  
customer attempts to join a team, such that the customer risk rating for each customer  
50 must only be assigned once.

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10 44. The method for facilitating securities trading of Claim 41 further comprising the steps of:

15 automatically generating and transmitting to the customer a warning regarding membership in the team if the customer risk rating and the trade risk rating do not bear

5 a predetermined relationship to one another; and

20 automatically approving membership in the team if an override indication is received from the customer.

25 45. A method for facilitating securities trading comprising the steps of:

providing a computer;

30 receiving an indication from a seller that the seller desires to sell a financial instrument and an indication from a buyer that the buyer desires to purchase the

5 financial instrument;

35 notifying the buyer and the seller of a proposed trade and allowing for negotiation between the buyer and the seller;

40 determining a fair market value of the financial instrument, and transmitting the fair market value to the buyer and the seller;

10 45 receiving a buyer trade ticket from the buyer and a seller trade ticket from the seller and determining whether the terms of the buyer trade ticket match the terms of the seller trade ticket;

50 determining, if the terms of the buyer trade ticket match the terms of the seller trade ticket, whether the terms of the proposed trade are fair; and



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15 automatically executing the trade if the terms are fair.

10 46. The method for facilitating securities trading of Claim 45 further comprising the  
step of, if the terms of the buyer trade ticket do not match the terms of the seller trade  
15 ticket, generating and transmitting to the buyer and the seller a notification that the  
terms do not match, and allowing further negotiation between the buyer and the seller.

20 47. The method for facilitating securities trading of Claim 45 further comprising the  
step of, if the terms of the proposed trade are not fair, generating and transmitting to  
25 the buyer and the seller a notification that the terms are not fair, and allowing further  
negotiation between the buyer and the seller.

30 48. The method for facilitating securities trading of Claim 45 wherein said  
determining whether the terms of the proposed trade are fair step comprises the step  
35 of determining that the terms are fair if the terms include a price which falls between a  
current quoted price for an institutional-size round lot and a prevailing price on the odd  
5 lot market for financial instruments comparable to the financial instrument which is the  
40 subject of the proposed trade.

45 49. The method for facilitating securities trading of Claim 45 further comprising the  
steps of:

providing a customer rules database accessible by the computer;

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storing a set of customer risk assessment rules on the customer rules  
5 database;

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receiving customer information from the buyer, retrieving the set of customer  
risk assessment rules from the customer rules database, and assigning a customer  
risk rating to the buyer based upon the received buyer customer information and the  
set of customer risk assessment rules;

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receiving customer information from the seller, retrieving the set of customer  
risk assessment rules from the customer rules database, and assigning a customer  
risk rating to the seller based upon the received seller customer information and the  
set of customer risk assessment rules;

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providing a trade rules database accessible by the computer;

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storing a set of trade risk assessment rules on the trade rules database;

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receiving trade details for the proposed trade, retrieving the set of trade risk  
assessment rules from the trade rules database, and assigning a trade risk rating to  
the proposed trade based upon the received trade details and the set of trade risk  
assessment rules; and

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automatically approving the proposed trade if each of the buyer and seller  
customer risk ratings and the trade risk rating bear a predetermined relationship to one  
another.

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50. The method for facilitating securities trading of Claim 49 wherein the buyer and  
seller customer risk ratings and the trade risk rating comprise numerical indications of  
associated risk and wherein said automatically approving the proposed trade step

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comprises the step of automatically approving the proposed trade if each of the buyer  
5 and seller customer risk ratings is no greater than the trade risk rating.

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51. The method for facilitating securities trading of Claim 49 further comprising the  
steps of:

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providing a customer risk rating database accessible by the computer;  
storing the customer risk ratings assigned to the buyer and seller on the  
5 customer risk rating database; and

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retrieving the stored customer risk rating each time that customer attempts to  
participate in a trade, such that the customer risk rating for each customer must only  
be assigned once.

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52. The method for facilitating securities trading of Claim 49 further comprising the  
steps of:

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automatically generating and transmitting a warning regarding the proposed  
trade if the customer risk rating and the trade risk rating do not bear a predetermined  
5 relationship to one another; and

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automatically approving the proposed trade if an override indication is received  
from the customer.

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53. The method for facilitating securities trading of Claim 52 wherein said  
automatically generating and transmitting a warning step is performed only for the

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customer whose customer risk rating does not bear the predetermined relationship with the trade risk rating.

54. A system for facilitating securities trading comprising:

a computer;

a customer rules database accessible by said computer;

a set of customer risk assessment rules stored on said customer rules

database;

software executing on said computer for receiving customer information from a customer, for retrieving said set of customer risk assessment rules from said customer rules database, and for assigning a customer risk rating to the customer based upon the received customer information and said set of customer risk assessment rules;

a customer risk rating database accessible by said computer; and

software executing on said computer for storing the customer risk rating assigned to the customer on said customer risk rating database;

software executing on said computer for receiving trade details from a customer for a proposed trade and for automatically approving the proposed trade if the customer risk rating is below a risk threshold for the proposed trade.

55. The system for facilitating securities trading of Claim 54 wherein the system determines the customer risk rating and automatically approves the proposed trade for each party to the proposed trade.

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5 56. The system for facilitating securities trading of Claim 54 further comprising software executing on said computer for retrieving the stored customer risk rating stored on said customer risk rating database for the customer each time that customer attempts to participate in a trade, such that the customer risk rating for each customer must only be assigned once.

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57. The system for facilitating securities trading of Claim 54 wherein the customer risk rating is indicative of the financial resources of and the investment experience of the customer.

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58. The system for facilitating securities trading of Claim 54 further comprising software executing on said computer for automatically generating and transmitting to the customer a warning regarding the proposed trade if the customer risk rating is not below a risk threshold for the proposed trade, and for automatically approving the proposed trade if an override indication is received from the customer.

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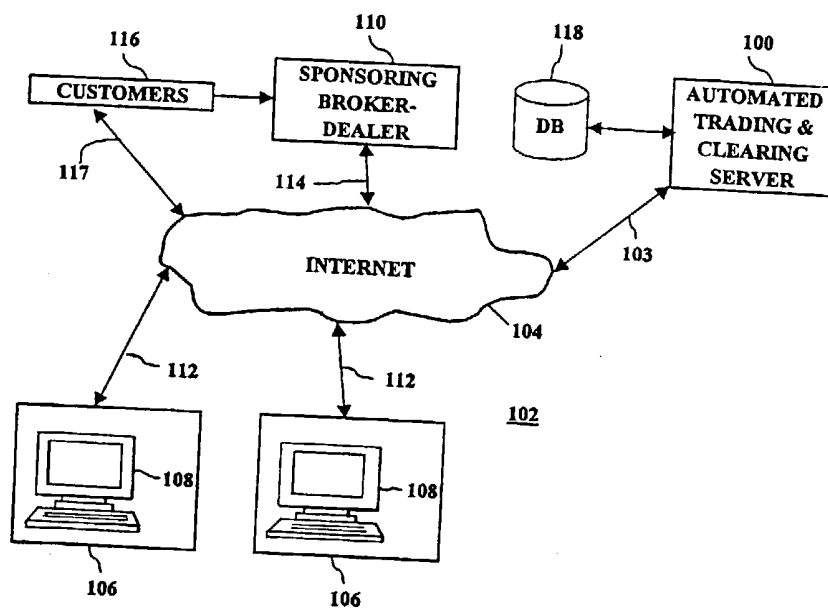


FIG. 1

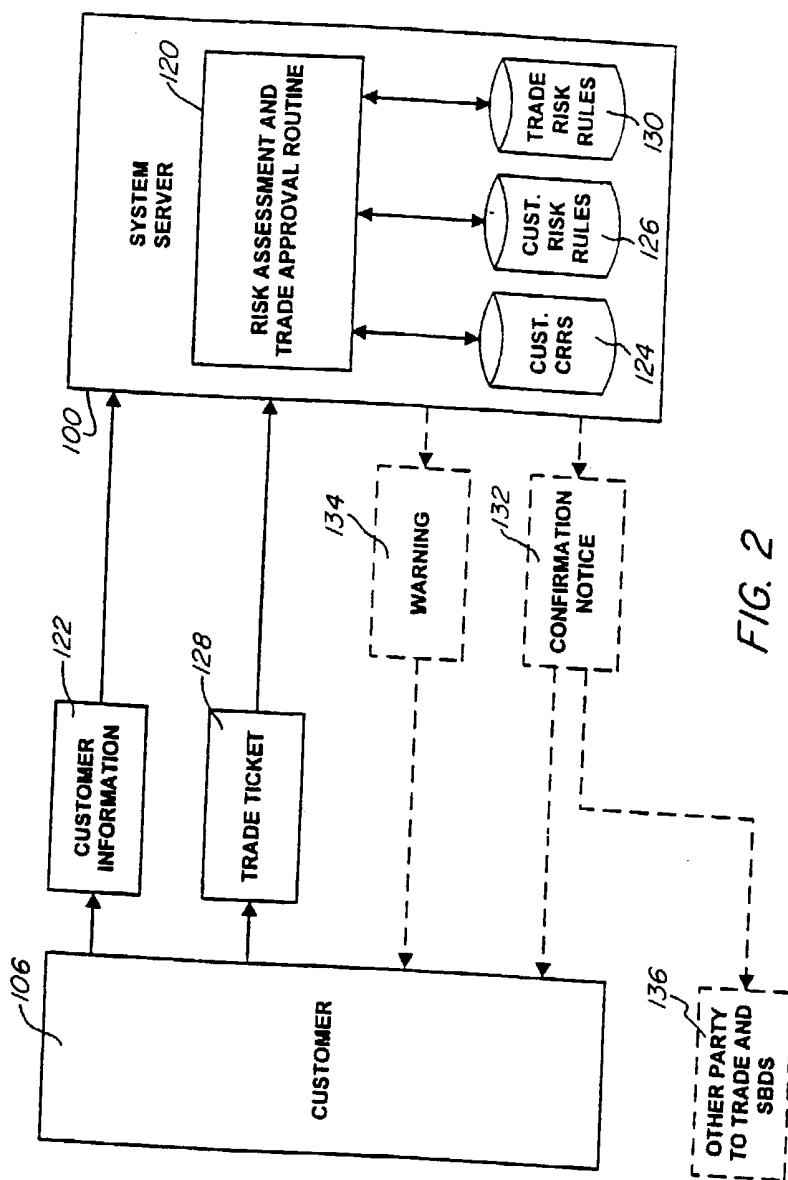


FIG. 2

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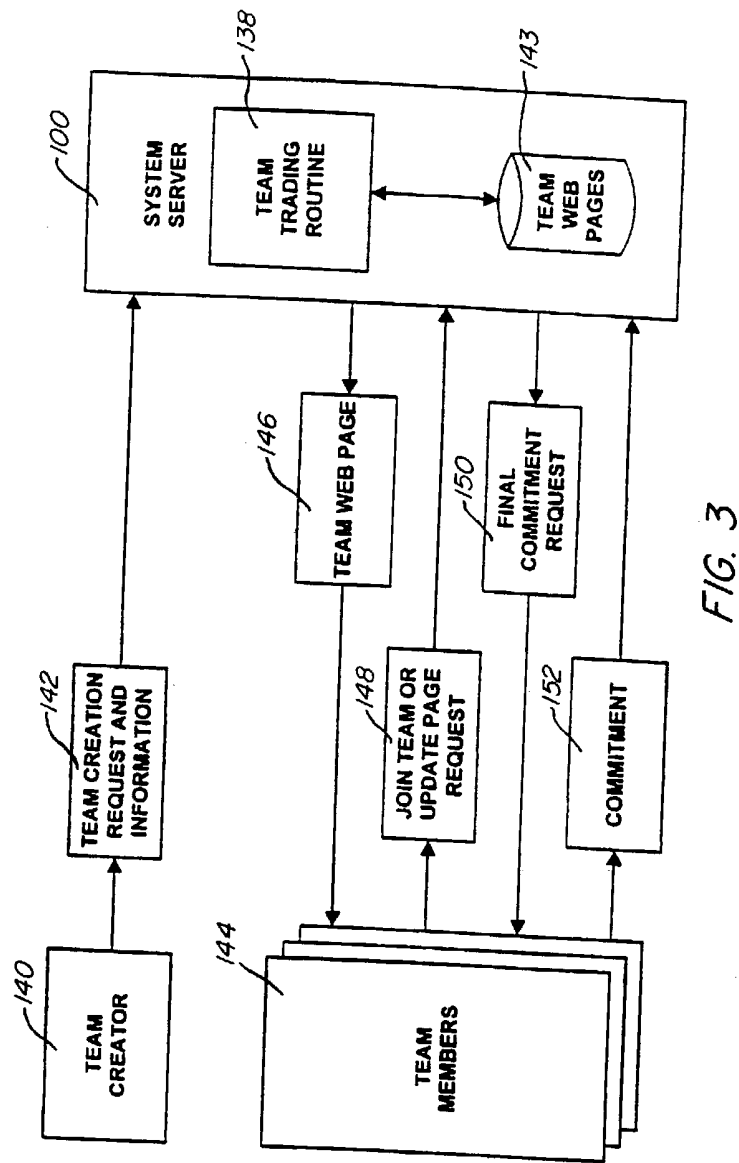


FIG. 3



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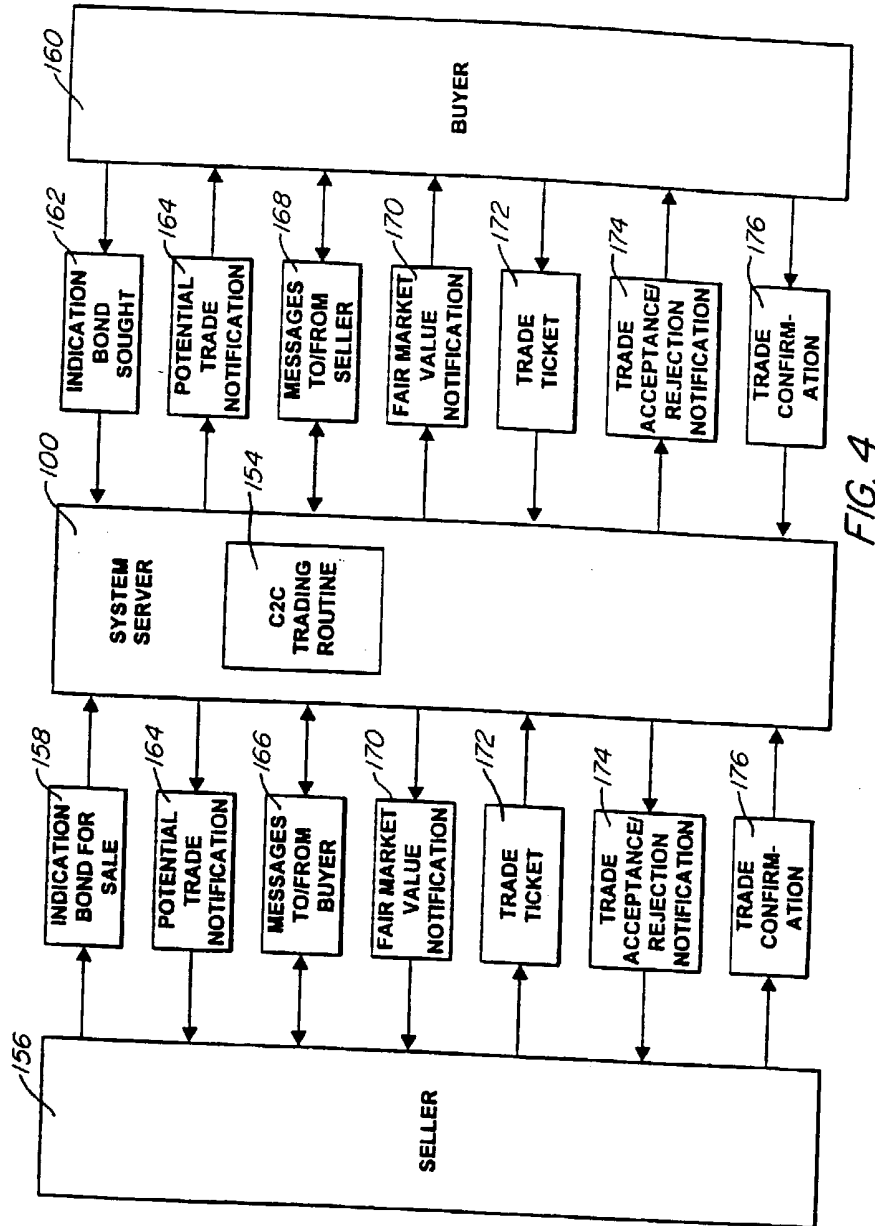


FIG. 4

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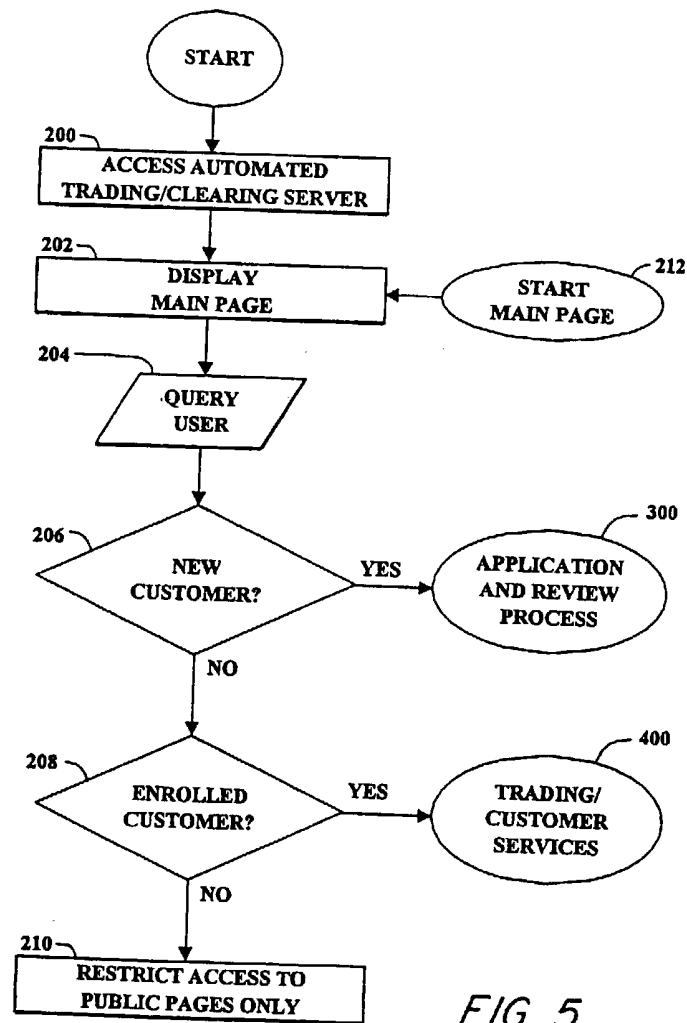
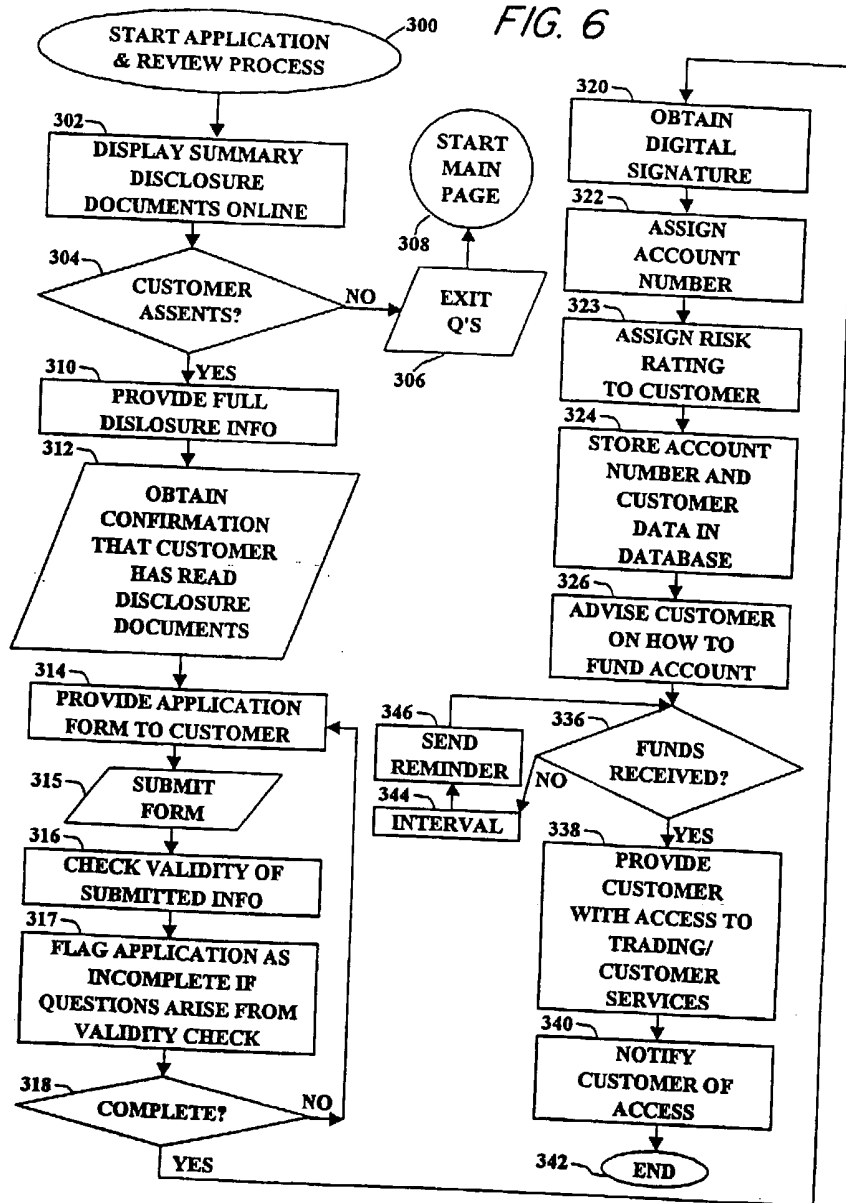


FIG. 5

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FIG. 6



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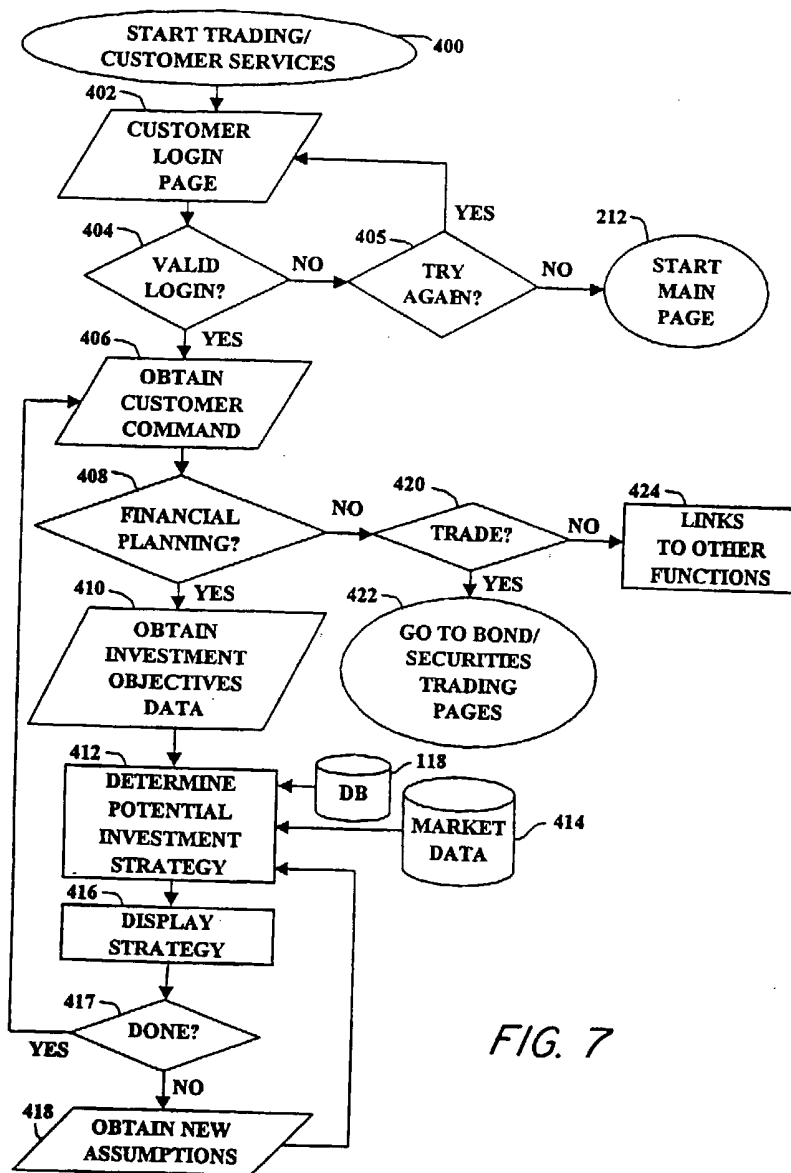


FIG. 7

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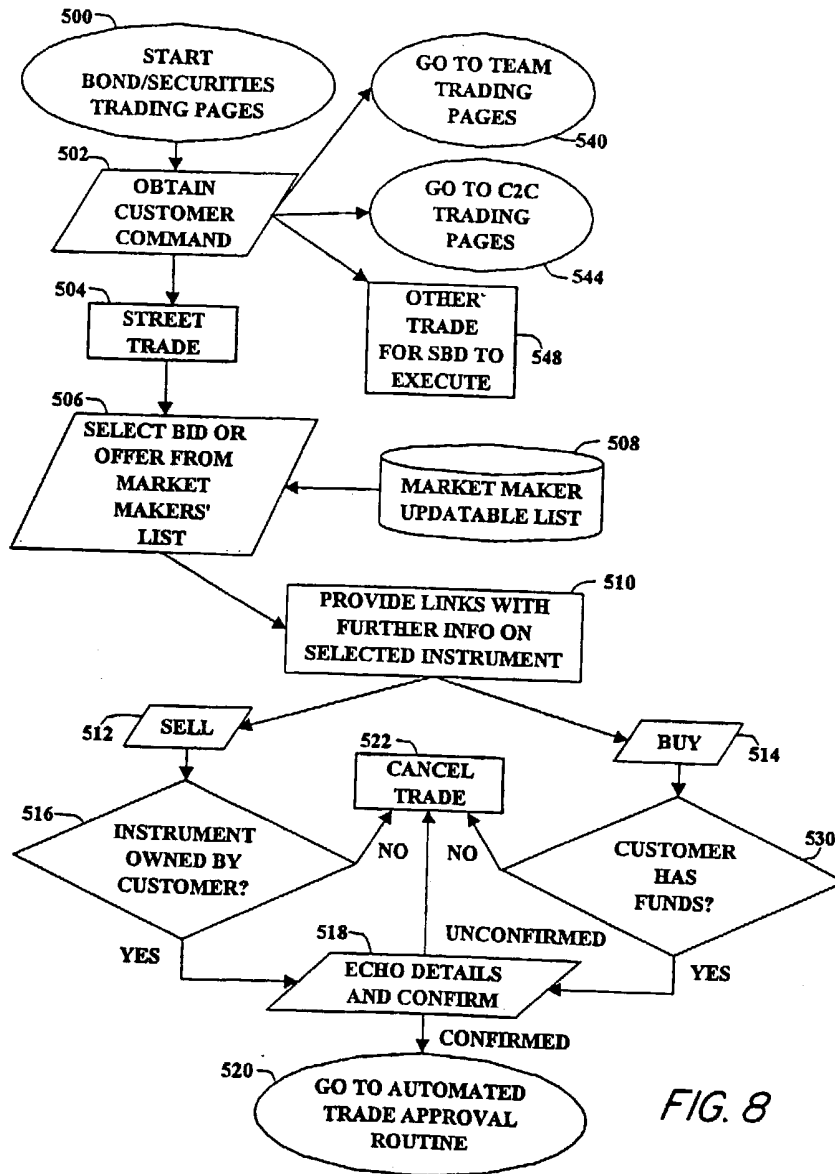
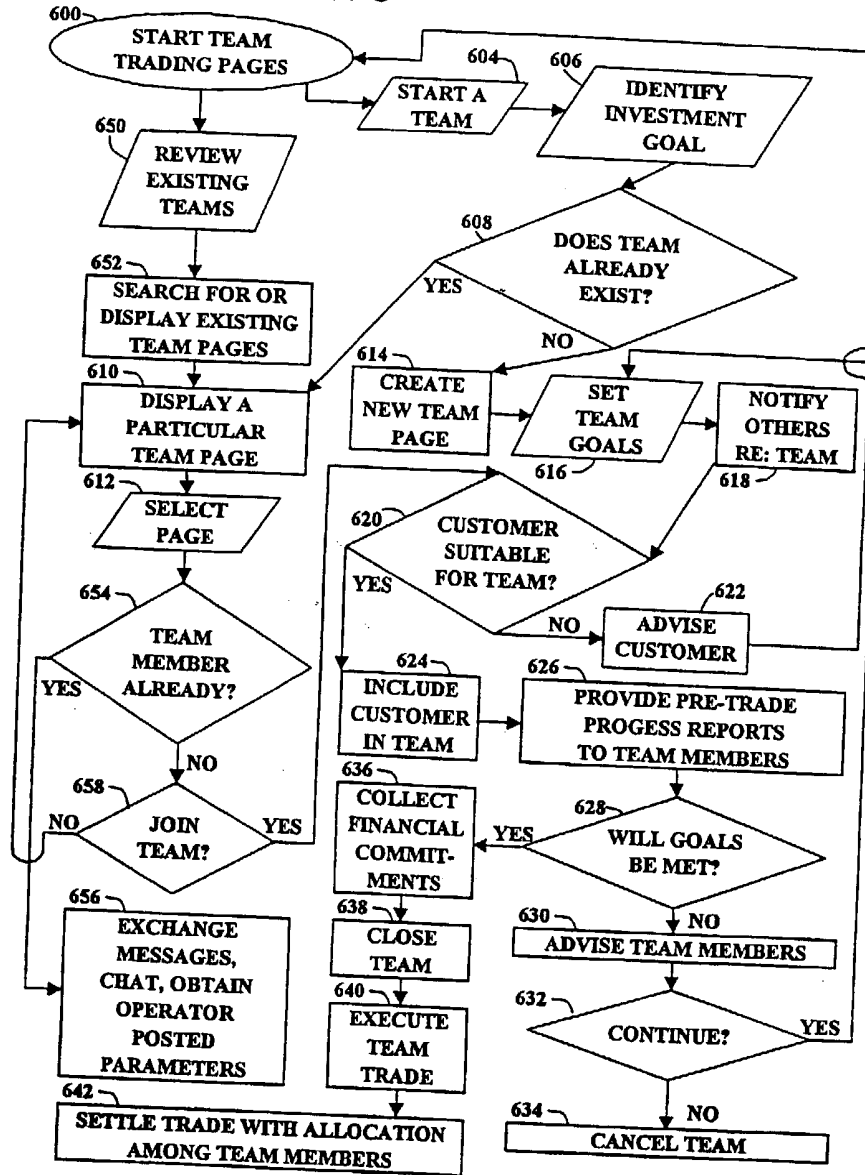


FIG. 8

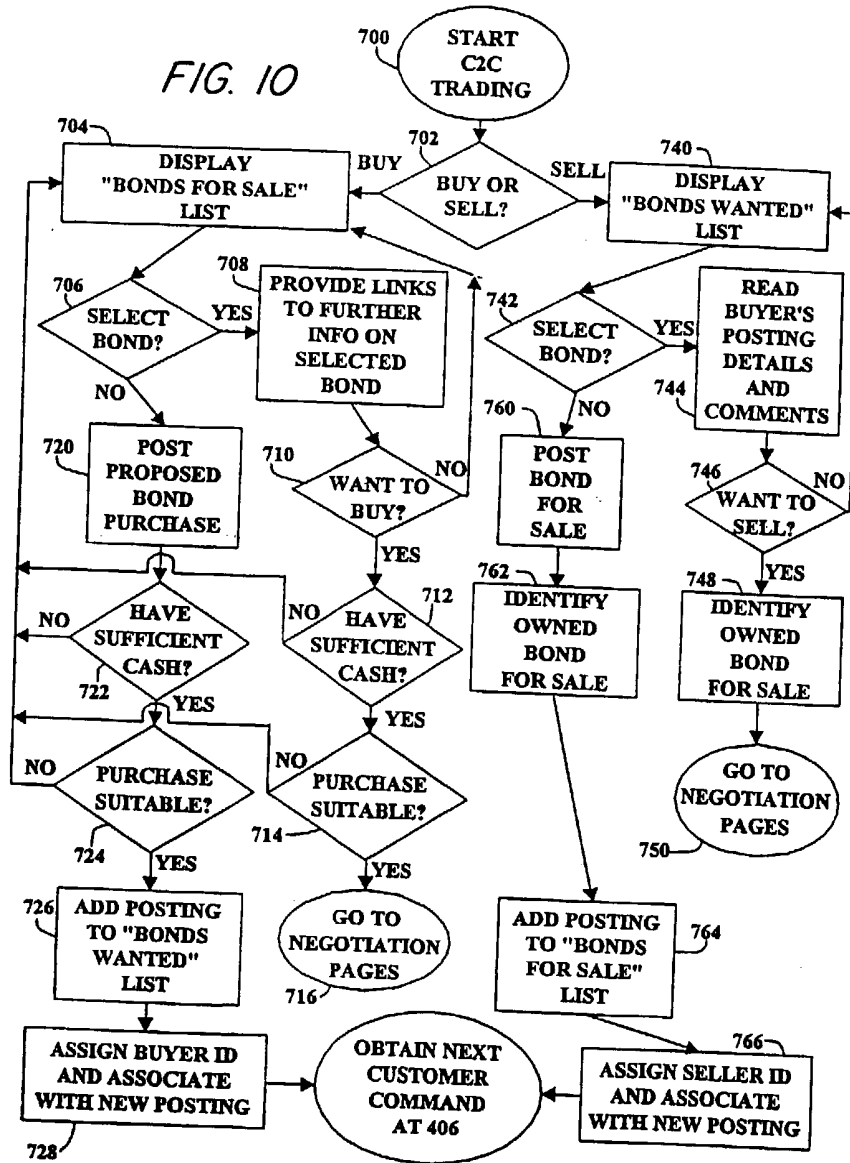
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FIG. 9



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FIG. 10



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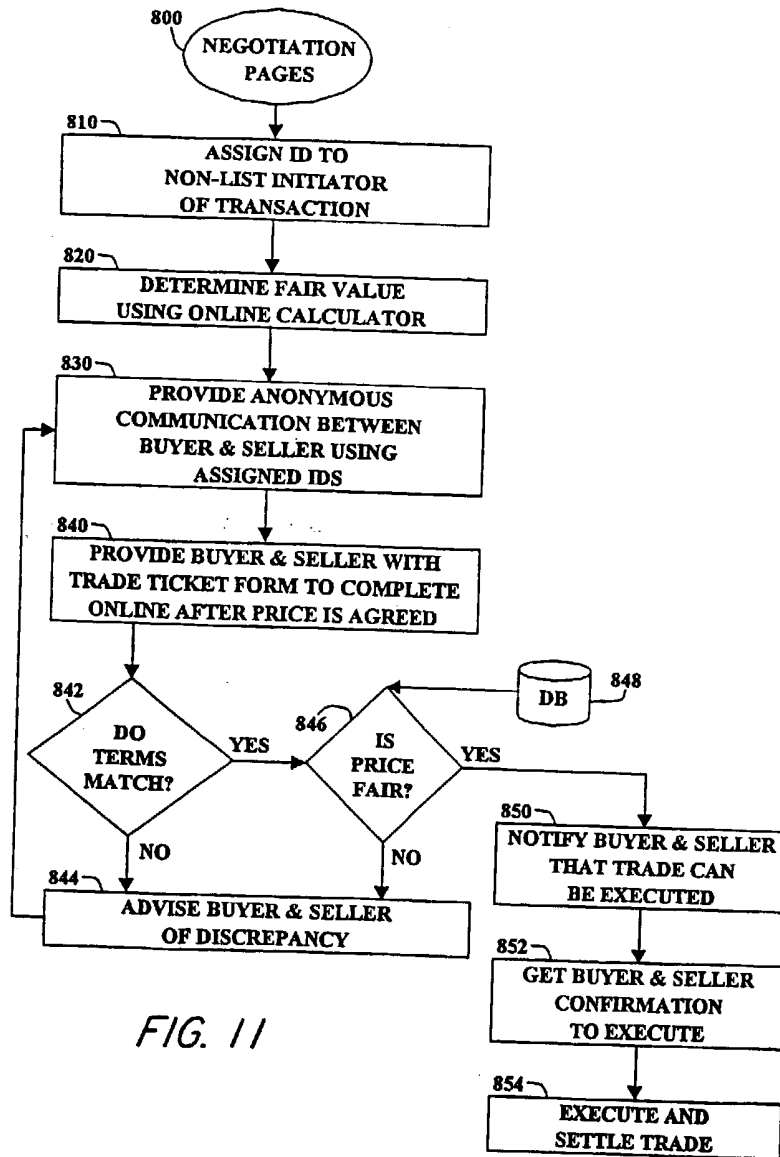
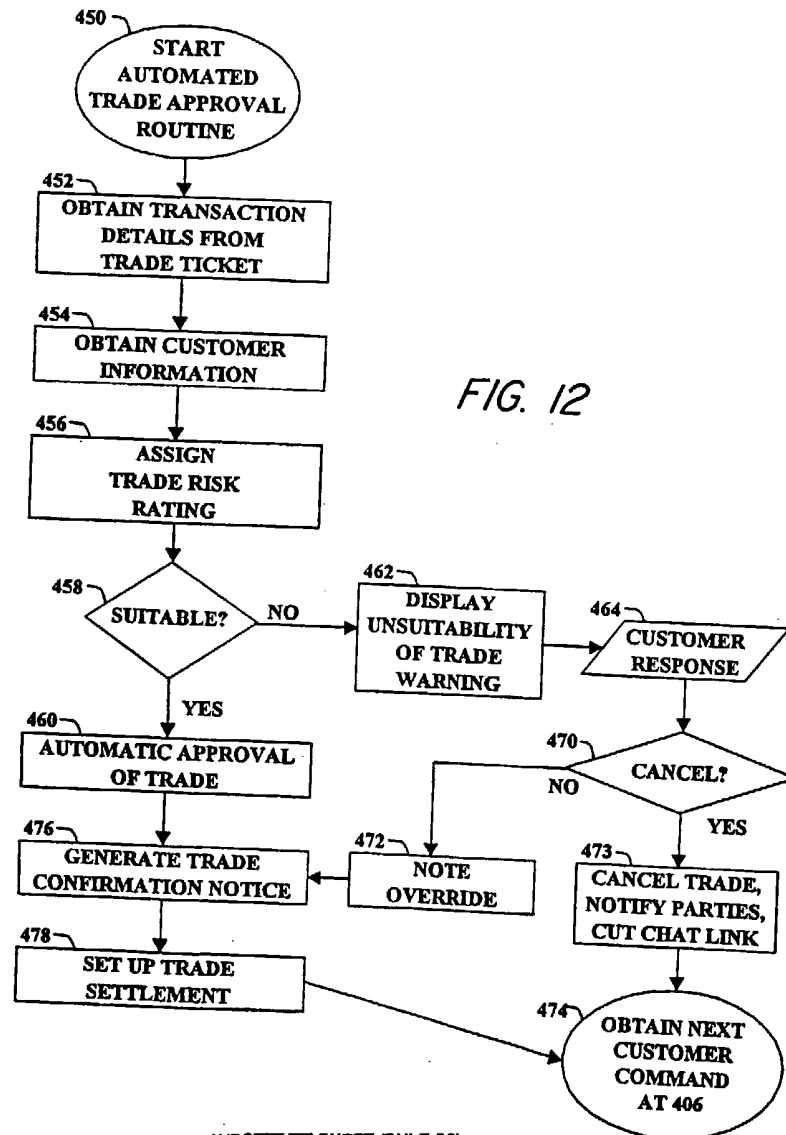


FIG. 11



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SUBSTITUTE SHEET (RULE 26)

13/20

Trade No. 588623009		
Account #	DEF678901234	—1002
Status	Executed	—1004
Buy/Sell	Buy	—1006
Amount	\$10,000	—1008
Security name	Georgia Power 8% due 1/15/2010	—1010
Security type	Corp bond	—1012
CUSIP No.	BF10905305	—1014
Execution method	C2C	—1016
Market/Limit	n/a	—1018
Limit price	n/a	—1020
Time limit	n/a	—1022
Order time	n/a	—1024
Trade date	4/19/1999	—1026
Settlement date	4/22/1999	—1028
Price	102.25%	—1030
Accrued interest	\$215.56	—1032
Gross amount	\$10,440.56	—1034
Commission	\$75.00	—1036
SEC fee	\$0.00	—1038
Tax	\$0.00	—1040
Service charge	\$0.00	—1042
Net amount	\$10,515.56	—1044
Execution market	C2C	—1046
Sponsoring BD	X, Y and Z Partners	—1048
		—1050

FIG. 13

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**Team Investing**

**1100**

Click on the Team Name for more Team info.

Click here to Start a New Team. **1114**

**1102**

Active Teams					
Team Number	Name (click for more details)	Goal	Number Of Members	Current Commitments	Target Execution Date
T01123	The Broke Parents Club	Send our kids to a grossly overpriced college in 10-14 years	42	\$835,000	1/1/2000

**1112** **1104** **1106** **1108** **1110**

FIG. 14

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If you want to Start a New Team, submit your idea using the form below:

1202	
<b>Start a New Team</b>	
Give your Team a name	
1204 Action	<input checked="" type="radio"/> Buy a Security or similar category of securities <input type="radio"/> Sell a Security or similar category of securities <input type="radio"/> Implement an Investment or Hedging Strategy
Describe the Team's goal (be brief)	
1206 How much are you interested in placing with the Team?	
1208 When would you like to have the Team execute a trade?	Cash or market value of securities Specify a date or timeframe
1210 Your Name	
Account Number	
E-mail Address	
<div>1216</div> <div>1214</div> <div>1212</div>	

1200

FIG. 15

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**Bonds For Sale** 1300

These securities are being offered for sale by other Customers. All sellers must own the securities being offered in their account. All buyers must have sufficient cash in their account to fully pay for the purchase, including any commissions.

If you are interested in purchasing anything listed here, contact the seller directly to start negotiation of price.

Bonds For Sale								
ID No.	Issuer	Amount	Ratings	Coupon	Maturity	Call Date	Call Price	Seller ID (Click to negotiate)
BF109053 05	Georgia Power	\$10,000	A/a2/A	8%	1/15/2010	1/15/ 1999	104.25	ZZZ12345

If you want to buy, but nothing here suits your needs, **CLICK HERE** to post your buying interest on the Bond Wanted List.

1318

FIG. 16

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**Bonds Wanted** 1400

These securities are being sought for purchase by other customers. All sellers must own the securities being offered in their account. All buyers must have sufficient cash in their account to fully pay for the purchase, including any commissions.

If you are interested in selling your bonds to a buyer listed here, contact the buyer directly to start negotiation of price.

Bonds Wanted		1402	1404	1406	1410	1408	1412	1416
ID No.	Issuer or Description	Amount	Rating Range	Maturity Range, yrs	Coupon Range	Callable?	Buyer ID (Click to negotiate)	
BW10904999	Electric or Telephone utility	\$10,000	A AA	10 20	5% 9%	Yes	ABC111222333	

If you want to sell, but these listing are not of interest, [CLICK HERE](#) to post your selling interest on the Bond For Sale List.

1418

FIG. 17

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**1500**

**Post a "Bond For Sale" Notice**  
Your information (except personal info) will be posted exactly as typed.  
Please check it before submitting.

1502	Issuer or Description	<input type="text"/>	
1504	Amount	<input type="text"/>	
1506	Ratings	<input type="text"/>	S&P/Moody's/Fitch
1508	Coupon	<input type="text"/>	
1510	Maturity	<input type="text"/>	
1512	Call Date	<input type="text"/>	("nc" if noncallable)
1514	Call Price	<input type="text"/>	("nc" if noncallable)
1516	Your Name	<input type="text"/>	
	Account Number	<input type="text"/>	
	E-mail Address	<input type="text"/>	

1520      1518

FIG. 18

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1600

Post a "Bond Wanted" Notice	
Your information (except personal info) will be posted exactly as typed. Please check it before submitting.	
1602 Issuer or Description	<input type="text"/>
1604 Amount	<input type="text"/>
1606 Ratings Range	Minimum <input checked="" type="checkbox"/> AAA <input type="checkbox"/> AA <input type="checkbox"/> A <input type="checkbox"/> BBB <input type="checkbox"/> BB or less Maximum <input checked="" type="checkbox"/> AAA <input type="checkbox"/> AA <input type="checkbox"/> A <input type="checkbox"/> BBB <input type="checkbox"/> BB or less
1610 Maturity Range	Min yrs <input type="text"/> Max yrs <input type="text"/>
1608 Coupon Range	Min % <input type="text"/> Max % <input type="text"/>
1612 Callable	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1616 Your Name	<input type="text"/>
Account Number	<input type="text"/>
E-mail Address	<input type="text"/>

1620 1618

FIG. 19



20/20

FIG. 20

Order Form	
1700	You are placing a firm order for execution by MEK. Please provide complete information.
What is your account number?	1704
What do you want to do? <input checked="" type="checkbox"/> Buy <input type="checkbox"/> Sell	1708
How much?	1710
Will you accept less than this amount? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1711a
If Yes: What is the minimum amount you will accept?	1711b
And, in what minimum increments?	1711c
What security?	1714
<input checked="" type="checkbox"/> Corporate Bond	<input type="checkbox"/> U.S. Agency Bond
<input type="checkbox"/> Municipal Bond	<input type="checkbox"/> Common stock
<input type="checkbox"/> U.S. Treasury Bond	<input type="checkbox"/> Stock option
If a bond:	
Issuer name:	Coupon, %:
Maturity:	
Callable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, first call date:
CUSIP number:	
If a stock or stock option:	
Company name:	or ticker symbol:
If a stock option:	
Type: <input checked="" type="checkbox"/> Call <input type="checkbox"/> Put	
Strike price:	Expiration month:
At what price?	
<input type="checkbox"/> Market	<input type="checkbox"/> Limit price:
1720	1722
	<input type="checkbox"/> Stop price:
	1723
When?	
<input checked="" type="checkbox"/> Day	<input type="checkbox"/> Market open
<input type="checkbox"/> Market close	<input type="checkbox"/> GTC - Good 'Til Cancelled
If GTC, please specify a "Drop Date"	
1724	
SEND ORDER TO MEK	CLEAR THIS ORDER

SUBSTITUTE SHEET (RULE 26)

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/07561

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(7) : G06F 17/30 US CL : 705/26, 27, 37 According to International Patent Classification (IPC) or to both national classification and IPC																									
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) U.S. : 705/26, 27, 37  Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)																									
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>																									
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																							
Y	US 5,497,317 A (HAWKINS et al.) 05 March 1996 (5.3.96), All.	1-8, 33-37, 54-58.																							
Y	US 4,903,201 A (WAGNER) 20 February 1990 (20.2.90), All.	1-8, 33-37, 54-58.																							
Y	US 5,809,483 A (BROKA et al.) 15 September 1998 (15.9.98), All.	1-8, 33-37, 54-58.																							
Y	US 5,563,783 A (STOLFO et al.) 08 October 1996 (8.10.96), All.	9-19, 38-44.																							
Y	US 4,933,842 A (DURBIN et al.) 12 June 1990 (12.6.90), All.	9-19, 38-44.																							
Y	US 5,806,047 A (HACKEL et al.) 08 September 1998 (8.9.98) All.	9-19, 38-44.																							
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.																									
<table border="0"><tr><td>* Special categories of cited documents:</td><td>* F</td><td>later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td></tr><tr><td>* A</td><td>document defining the general state of the art which is not considered to be of particular relevance</td><td>* G</td><td>document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td></tr><tr><td>* E</td><td>earlier document published on or after the international filing date</td><td>* H</td><td>document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td></tr><tr><td>* L</td><td>document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td><td>* I</td><td>document member of the same patent family</td></tr><tr><td>* O</td><td>document referring to an oral disclosure, use, exhibition or other means</td><td></td><td></td></tr><tr><td>* P</td><td>document published prior to the international filing date but later than the priority date claimed</td><td></td><td></td></tr></table>			* Special categories of cited documents:	* F	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	* A	document defining the general state of the art which is not considered to be of particular relevance	* G	document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	* E	earlier document published on or after the international filing date	* H	document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	* L	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	* I	document member of the same patent family	* O	document referring to an oral disclosure, use, exhibition or other means			* P	document published prior to the international filing date but later than the priority date claimed		
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* P	document published prior to the international filing date but later than the priority date claimed																								
Date of the actual completion of the international search 18 JULY 2000		Date of mailing of the international search report 09 AUG 2000																							
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230		Authorized officer TODD EMMANUEL GOELTZ <i>James R. Matthews</i> Telephone No. (703) 305-3900																							

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/07561

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,136,501 A (SILVERMAN et al.) 04 August 1992 (4.8.92), All.	20-32, 45-53.
Y, P	US 6,014,643 A (MINTON) 11 January 2000 (11.1.00), All.	20-32, 45-53.
Y	US 5,592,375 A (SALMON et al.) 07 January 1997 (7.1.97), All.	20-32, 45-53.
Y	US 5,592,379 A (FINFROCK et al.) 07 January 1997 (7.1.97), All.	9-19, 38-44.